



THE TRAILMIX



Issue 2:

Technology: For Better, For Worse, or For Neurodivergence?

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Introduction:

A Closer Look at Tech's Effect on Neurodivergent Experiences

In today's digital age, technology has become a powerful tool, providing neurodivergent individuals with innovative solutions that cater to their specific needs. However, just like how a coin has two sides, technology comes with its cons as well. It is important for adults to provide children with guidance and close supervision. Only then can technology truly be exploited for the convenience it brings.

On that note, even with the introduction of technology, social stigma surrounding neurodiversity is still a persistent issue. Neurodivergent individuals are often misunderstood and looked down upon, with many struggling to find employment opportunities. An estimated 15-20% of the population are neurodivergent, yet discrimination is still commonplace. Sure, it can be argued that this is due to peoples' lack of awareness, but what really needs to change is societal attitudes. We have to be more inclusive.

1. Sean McAllister What is it really like to be neurodivergent? Zurich Media Magazine. Published June 3, 2023. Accessed November 15, 2023. <https://www.zurich.com/en/media/magazine>

Opportunities Created by Technology

BY WONG E VEE



With the continuous advancement of technology, it is no surprise that technology is now an integral part of our lives. In this rapidly advancing society, technology has created a wide range of opportunities and conveniences for us, and for neurodivergent individuals, in many different areas.

First Stop: Education

One of the areas that has definitely been widely impacted by technology is education. Education plays an integral role in all children's lives,

and it is something that Singaporean children go through for at least 6 years of their lives. With the enhancement of technology, neurodivergent children can receive better education to suit their specific learning needs. Besides textbooks and worksheets, there are more mediums and tools that can be used in the journey of education, like videos, gamified learning websites, and spell-checkers. These tools offer explanations and visualisations of complex concepts. For example, some YouTube channels offer animated explanations of complex concepts, which can assist visual learners in understanding these concepts better. These learning tools are especially beneficial for students with dyslexia who may struggle to read lengthy pages of textbooks and documents.



YouTube channel Alphablocks provides videos on how to read and write¹

1. The A to Z of Animals! | Learn to Read for Kids. [www.youtube.com](https://www.youtube.com/watch?v=o0pgY8Na94E). Accessed November 29, 2023. <https://www.youtube.com/watch?v=o0pgY8Na94E>

Besides learning in the classroom, technology can also help enhance the learning of important skills and strengths. Platforms like virtual reality can provide a controlled environment for social skills training, thus equipping students to learn and practise these skills. Other platforms like Google Calendar, Trello, and Notability can support students' organisation, working memory, and other executive functioning skills, which can contribute to the holistic development of students.²

Other than online platforms, technology has resulted in the development of many devices. Noise-cancelling headphones, in particular, can help remove background noise, thus reducing distractions and in turn increasing concentration when studying or doing work. This can help those with autism who have hypersensitivity in blocking out painful background noise.³

Next: Health

Apart from education, a crucial part of life is physical and mental health. Often times, we place a lot of focus on education or excelling at work, forgetting that health is the most important thing in life. That being said, with technology, health can now be easily monitored and improved.

Some individuals with ADHD have reported that devices like Fitbits and smart watches have helped them manage stress levels and improve their mental well-being. These devices can monitor stress levels, set reminders and alarms, and track the user's physical activity. These devices can also track steps, active minutes, and other fitness metrics, thus motivating users to exercise regularly, which leads to better mental well-being.



a smart watch showing fitness metrics like step count and the user's heart rate⁴

Besides these functions, Fitbits and smart watches can also track sleep quality, monitor sleep patterns, and provide information on the user's sleep quality, which can be useful in addressing potential sleep-related challenges. These devices are helpful in monitoring physical health and encouraging more physical exercise, which can have positive effects on those with ADHD.⁵

2. Using Technology to Support 10 Executive Functioning Skills. Edutopia. <https://www.edutopia.org/article/using-technology-support-10-executive-functioning-skills>

3. How Can Noise Cancelling Headphones Help with ASD and Autism. Solitude Headphones. <https://positivevibesinc.com/pages/how-can-noise-cancelling-headphones-help-with-asd-and-autism>

4. Walmartimages.com. Published 2023. Accessed November 29, 2023. <https://i5.walmartimages.com/asr/2b1f94bb-1c77-4f67-bcd4-6e8ef14c372b.e5ef5d9ea467a550f4c1232e18a076db.jpeg>

5. Preiato D. ADHD and Exercise: What You Need to Know. Healthline. Published October 19, 2021. <https://www.healthline.com/health/fitness/adhd-and-exercise#exercise-and-adhd>

Lastly: The Future

For the neurodivergent children growing up in a digital age, parents will definitely have many concerns for their future. But though the future may seem uncertain, we can confidently say that technology has not only seen the development of more online platforms and devices, but it has also created more opportunities for everyone, including neurodivergent individuals.

Alongside the development of technology, new and good-paying jobs such as web developers, software engineers and computer programmers have been introduced. These jobs can be suitable for neurodivergent individuals, especially those with autism. Research has shown that people with autism have enhanced executive functioning skills, resulting in high levels of logic, and heightened abilities to process and analyse information logically.⁶ This makes them suitable to take on job opportunities created by the advancement of technology.

Technologies like Artificial Intelligence (AI) can also help in the integration of neurodivergent individuals into the workforce. Companies that hire neurodivergent individuals can have diversity in thought, creativity,

approaches, and innovation, but neurodivergent individuals may also face communication or other challenges. AI can help solve these challenges and improve work experience. For example, AI can help verbalise and write down the ideas that neurodivergent individuals have but are struggling to explain to others.⁷

So...it's Good?

In short, these are just some of the many opportunities that technology can open up for neurodivergent individuals. Whether these opportunities are good for you depends on what you are looking for and how you intend to make use of technology in this rapidly evolving world.



An iPad being used in a session at Catchwise Learning. (child actor: Spencer Yeo)

6. Murphy J. Why People With Autism Are More Logical. SCIL Psychology. Published March 19, 2023. Accessed November 29, 2023. <https://scil.com.au/why-people-with-autism-are-more-logical/>

7. How AI tech can unlock the "superpowers" of neurodiverse workers. euronews. Published June 28, 2023. Accessed November 29, 2023. <https://www.euronews.com/next/2023/06/28/how-technology-like-ai-can-unlock-the-superpowers-of-a-neurodiverse-workforce>

Challenges Created by Technology

BY ISABELLE LIM

With so many opportunities presented to us through the integration of technology, people are often blind-sighted by the wonders of technology that they fail to realise the potential harms it may bring. Undeniably, technology has created many pathways for neurodivergent individuals, helping them to mitigate challenges posed as they navigate through their lives. But one must not forget that the impact of technology can be complex, with both positive and negative aspects. Negligence, over reliance and too little parental guidance are the main factors that accentuates the detrimental effects of technology.

Platform for Misinformation

Although social media allows for greater advocacy, with an easier method to spread information, misinformation will inevitably surface. Misinformation is not uncommon and is a serious issue that has to be addressed. All it takes is for one influential figure to say the wrong thing at the wrong time or to make a simple error in their phrasing, and misinformation about

neurodivergence would be spread like wildfire, making it rather difficult to contain or correct. Just because one happens to make a scornful remark, others would unthinkingly hop on the bandwagon too. It may even reinforce existing misconceptions surrounding neurodivergence. Such misinformation often creates a lack of understanding between neurodivergent and neurotypical individuals, causing social stigmas to be enforced. Social stigmas could lead to many detrimental impacts, from employment challenges, workplace discrimination, to cyberbullying, and snide remarks from peers. What might have been a lapse in phrasing could in turn harm so many neurodivergent individuals, be it mentally or physically.

Misinformation does not only occur because of what an influencer might have said. It can occur through misinterpretation too. Oftentimes, one cannot accurately deduce the tone of text-written posts or text messages and may misinterpret the purpose and message of it. It is important to not jump to conclusions based on a singular source and one should remember to cross-check using multiple sources before deriving a reliable answer. Neurodivergent

individuals who are already driven to a corner by existing social stigmas, may be more vulnerable.



social stigma can be further reinforced by misinformation, which may negatively affect neurodivergent individuals¹

Although parents cannot shield their child from such hurdles forever, they can play their role through close guidance and ensuring that misunderstandings are cleared up through proper communication. It is important for their child to understand that the things on social media should be taken with a pinch of salt.

Keeping up with the Trends

Another thing about technology is that it is changing rapidly. In this digital age, new social media platforms are making their debut, technological innovations like robots are appearing more often on the news. As technology advances,

society adapts too. In addition to the current struggles neurodivergent individuals already face, they also have to keep up with these changes and learn how to make use of technology to their advantage.

Schools have introduced PLDs (Personal Learning Devices), making learning more convenient but also more fast-paced, with the integration of flipped classrooms and independent learning.

This poses a challenge to neurodivergent children as they are expected to adapt to rapidly evolving technology despite having little guidance. Neurodivergent individuals may face troubles navigating and understanding complex user interfaces which are not user-friendly and intuitive. This will disrupt their learning and can contribute to feelings of distress.

Neurodivergent individuals with sensory sensitivities like those with ADHD or ASD may feel utterly disturbed by technologies that involve bright lights or blaring sounds. When they are met with such hurdles, they may feel afraid to reach out for help or struggle to express their troubles, leaving them no choice but to manage the overwhelming workload on their own. They may even feel discouraged to make use of

1. (No date a) The "untold" side of covid-19: Social stigma and ... - sage journals. Available at: <https://journals.sagepub.com/doi/full/10.1177/0253717620935578> (Accessed: 29 November 2023).

Addiction and Overreliance

Lastly, as all parents know, those who overuse technology are susceptible to getting addicted to social media or online video games. Managing screen time would become an issue once one develops a habit of using their technological devices. They may go from checking their phones every 3 hours, to checking it once every 10 minutes. And if they are denied access to their device, they may feel anxious and frustrated. To avoid this from happening, close-monitoring plays a significant role.

Since technology aids neurodivergent individuals in so many ways, how do we decide when it is too much? Some neurodivergent individuals may develop an overreliance on technology because of the way it provides them a sense of comfort and security. It provides them a safe environment with clear structures to follow such that everything is predictable and ensures that things will proceed smoothly. While such technology is helpful, becoming overly dependent on it will hinder their flexibility and ability to adapt. When neurodivergent individuals find themselves in situations involving face-to-face interactions, they may struggle due to lack of practice after being immersed in the virtual world. It is of utmost importance that they put away their devices every so often, so that they

can develop social skills necessary to navigate real-life situations.

Balance is Key

Ensuring a healthy balance between online and offline interactions is the key to maintaining one's social well-being while reaping the benefits that technology brings. Ultimately, It's not about whether or not to use technology, but about how to make the most of it.



a balance between the online world and the offline world is key in maintaining one's social well-being

Featured Artwork: Untitled



"Untitled" is an artwork by Erin Gunawan, a 9 year-old student at Catchwise Learning. Erin drew "Untitled" at an art school.

r/platformforthefuture

BY WANG YUANXIN

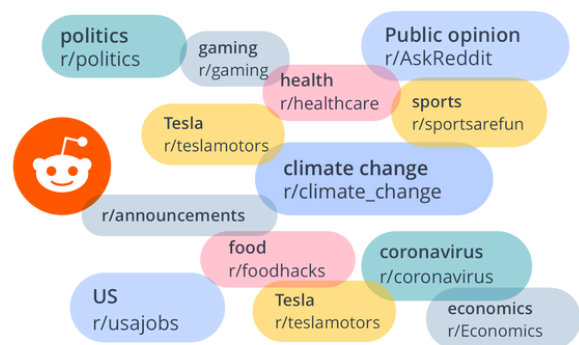


Lastly in this trilogy of articles on technology for neurodivergence, let's take a step back and delve into the many platforms, communities, echo chambers, resources and more that technology has laid before us. What this perhaps jarring combination of concepts refers to, is actually social media. A quintessential aspect of technology, and one that has irrevocably shifted how we receive and perceive information about neurodivergence.

A Platform for Advocacy

If you use social media, chances are

you've stumbled across posts advocating about a topic you had never even spared a thought for before. Maybe you find that you relate to some of the experiences shared, or your curiosity was piqued by this unfamiliar topic. Before you know it, you've joined a subreddit [a specific online community, and the posts associated with it, on the social media website Reddit], and are now an expert on said topic.



here are some examples of subreddits. subreddits each have a specific topic and start with "r/"¹

It is hard to imagine that barely two decades ago, this level of reach would have been nigh impossible, especially for highly stigmatised subjects like neurodivergence. Nowadays, there are social media accounts and forums

1. Newswhip.com. Published 2023. Accessed November 29, 2023. <https://www.newswhip.com/wp-content/uploads/2020/09/Subreddits.png>

spreading awareness for every cause there is. And it is not just the presence of all this content that makes social media such an effective platform for advocacy. It is the algorithms, and the interconnected nature of the internet which allows this content to reach an unimaginably massive audience. As such, more and more people of all demographics are coming into contact with the right information on neurodivergence - A great step towards destigmatising it as a whole. This does not just refer to purely educational content either; Many accounts, run by neurodivergent individuals, share heartwarming stories, humourous or relatable experiences, and other content that foster a sense of community amongst those that engage with them.

This brings us nicely to the next section -

A Platform for Communities to form, the Good and Bad

There are many factors that contribute to making social media a nurturing ground for communities. First, content is personalised, meaning social media algorithms interpret and respond to how the user reacts to content (if they liked it or blocked it). This means that those with similar interests can view the same content that they enjoy, and

gather to discuss with and support one another. Second, social media is interactive - the whole idea is to be "social", so to speak. Rarely do platforms do away with a comments section, or a reply function, and even direct messaging between users in the comments sections. Hence, users are encouraged to share their thoughts, provide advice, etc. There are even social media platforms that focus on building communities, with a prime example being Reddit, a platform that allows users to join communities or "subreddits" of a certain topic (E.g. r/Parenting with 5.9 million users, r/Autism with 300k users, r/ADHD with 1.7 million, to name a few).

So why is any of this important? A community allows for neurodivergent individuals from all walks of life to come together in a shared and safe space. For adults who have gone undiagnosed, they may find people who understand them, allowing them to understand themselves and get the help they have been denied for many years. For the youth, experiences, advice, and support others who have been in similar situations is invaluable in helping them build more self-



confidence. For all, knowing that they are not alone in a society that still largely shuns neurodivergent individuals, could be the difference between self-loathing and being proud of their identity.

Unfortunately however, all the factors mentioned above also act as double-edged swords: These nurturing grounds could easily breed echo chambers of misinformation and scorn. Personalised content means that those who enjoy consuming hateful content about neurodivergent individuals will continue to be recommended such messages; An interactive and accessible platform means anyone with malicious intentions could intrude on safe spaces, bringing severe distress or harm to others. Not to mention how most online communities are isolated from each other, resulting in the same general consensus floating around in each, however harmful and incorrect they are.

For Better, For Worse, or For the Neurodivergent?

For better or for worse, technology and social media are here to stay. With the numerous opportunities and challenges technology poses, what matters more is how we work towards using technology to our

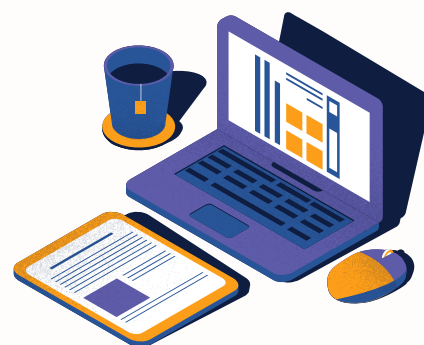
advantage.



technology will continue to advance and become an integral part of our lives²

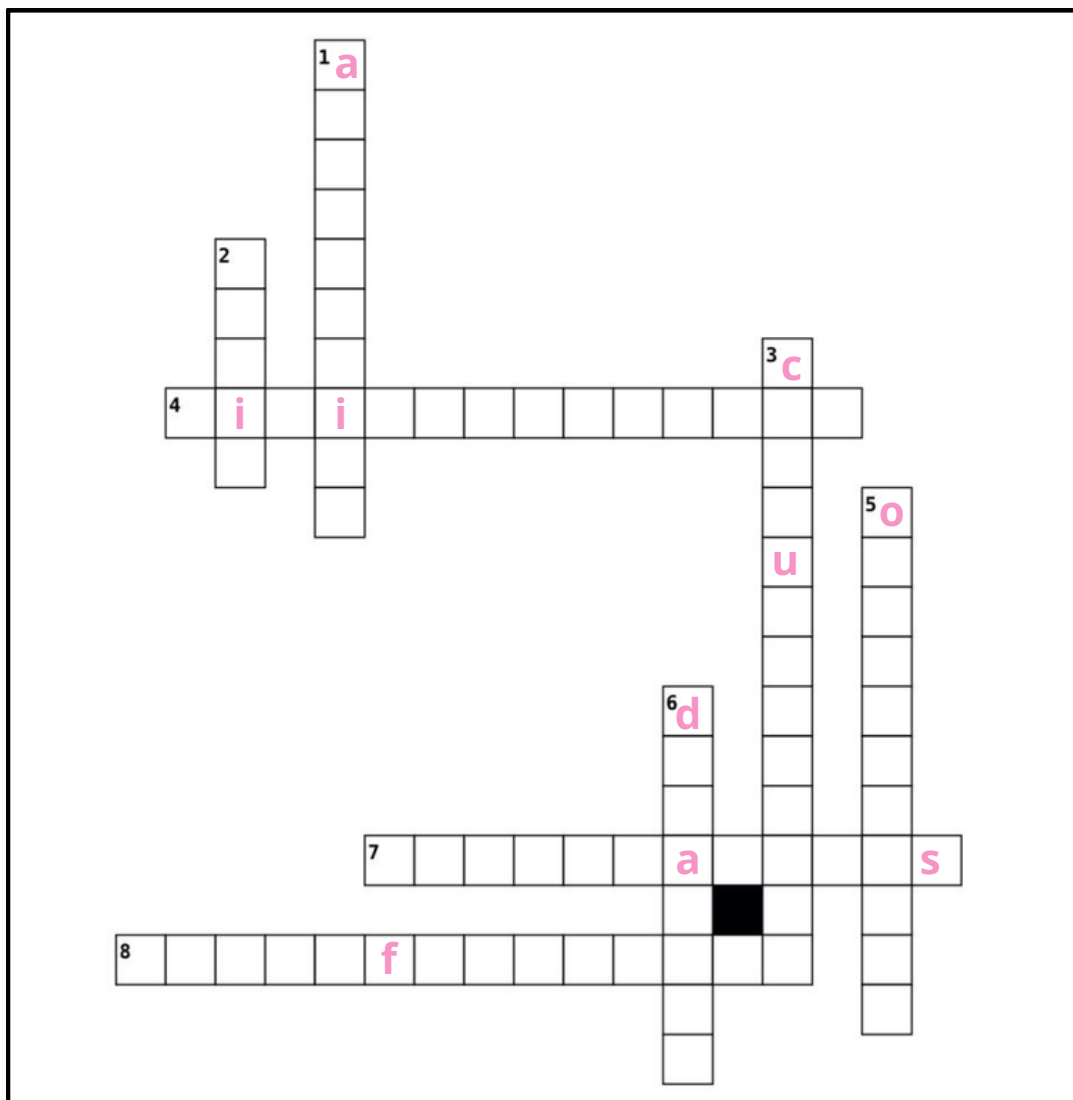
In this rapidly evolving age, technology should be introduced to neurodivergent children at an early age so they can learn how to use technology to their advantage and master it. Parents and teachers should work towards guiding neurodivergent children in mastering technology and using it to help the children integrate into society in the future.

As for whether technology is for the neurodivergent, that depends on how you plan to make use of it.



2. Uq.edu.au. Published 2023. Accessed November 29, 2023. <https://stories.uq.edu.au/business/technology-changing-business/assets/fMXk74Xckx/gettyimages-956550532-2154x1392.jpeg>

CROSSWORD!



Answers:

Down:

1. automation

2. media

3. communication

5. opportunity

6. dopamine

Across:

4. digitalisation

7. applications

8. misinformation

Down:


1. to minimise human input by means of technology
2. a means of communication on a large scale
3. a means of spreading, sharing, or receiving information
5. a chance
6. a hormone that plays a role in pleasure, learning and motivation

Across:

4. improving a process by making use of digital technology
7. programmes or pieces of software with a specific intended purpose
8. inaccurate or false information

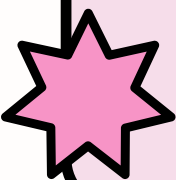
THE END!

We hope you
enjoyed this issue of
The Trailmix!



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article or stand a chance to be featured
in our next issue of The Trailmix?**

We want to hear you! If you have any
feedback, suggestions, ideas, articles,
or artworks, contacts us at
contact@catchwiselearning.com!



note: Ts and Cs apply