

## *Original Paper*

# Understanding Neurodiversity to Alleviate Attention Deficit Hyperactivity Disorder (ADHD) in ESL Classroom: An Interview with Psychologist

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### **Abstract**

*This paper aims at investigating how understanding neuroscience helps to develop writing skills by knowing the students who are suffering with Attention Deficit hyperactivity disorder in ESL classroom to decrease the symptoms and to suggest strategies to support the learners with learning disabilities.*

*The human brain plays crucial role in the language learning process. The brain has several parts with unique functions. Cerebrum is the largest part and has two lobes with same size to perform decoding information of the senses. Sigmund Exner (Australian Psychologist) identified the place of writing center in the brain which translates words perceived into the motor commands for hand writing. It reveals that Exner's area in the brain is specific region in frontal lobe plays dominant role in the process of writing production which is complicated task connected with complex web of integrated networks like affective, recognition and strategic network. The primary purpose of networks is dealing with language learning. The data collected from ADHD (Attention deficit hyperactivity disorder) questionnaire says that all individuals are not same in learning and their brains are not same as opined by many of neuroscientists in various research findings. So, based on the differences of individual brain and learning styles; it is imminent to address this problem in ESL classroom. It is observed that each learner has unique learning style and distinctive networks of the individual brain in heterogeneous class; all the learners are not getting equal opportunity to improve reading and writing skills due to learning disabilities.*

**Keywords**

*ADHD, neuroscience, cerebrum, brain networks, learning styles, disabilities, strategies, ESL*

**Introduction**

This paper aimed at identifying solutions for the learners who are suffering with ADHD (Attention deficit hyperactivity disorder) by sensitizing ESL teachers about the role of Neuroscience in developing writing skills in ESL class. This is the need of the hour to get minimum awareness about the link between the brain and developing cognitive skills which can reduce the barriers and can enhance learning skills. Neuroscience awareness helps language teachers to design customized strategies to increase academic performance among language learners.

The human brain plays vital role in the process of learning with several parts having unique features. In particular, Cerebrum is the largest part of the brain, it is called as thinking part of the brain that every teacher has to know about it because it decodes information of the senses. Lorna Uden says “To become a teacher without understanding the implications of brain-changing neuroplasticity is great loss to teachers and their future students”.

Sigmund Exner’s place is writing center in the brain which translates words perceived into the motor commands for hand writing. It is a specific region in frontal lobe and monitors the process of writing production which is complicated task connected with several networks like affective, recognition and strategic networks. Language learning depends on the networks of the brain because they control entire functioning of the brain. The data collected from ADHD (Attention deficit hyperactivity disorder) questionnaire says that all individuals are not same in learning and their brains are not same as opined by many of neuroscientists in various research findings.

So, teachers have to plan the activities to strengthen behavioural and cognitive impairments during teaching English for Second Language Learners.

**The role of brain and learning process**

The researchers focusing more on the anatomy of the brain and its functions at various regions. Now, the emphasis shifted from functioning of the brain to understanding the key areas which can affect learning process as well as cognitive development. According to David H. Rose, Anne Meyer, David Gordon, modern neuroscience views the human brain as the web of integrated with overlapping networks. Learning process depends on the changes in connections and the changes between the networks in the brain. The recent developments in neuroscience deeply focusing on learning process in education. It deals the problems in learning and also gives wide range of knowledge in understanding the origin of learning variabilities. This awareness helps the teachers and researchers to focus on mitigating the learning disabilities by changing methods and approaches to cater the need of all the learners.

As Lorna Uden writes, the brain is responsible for thinking and learning. It is essential to understand neuroscience of learning before we teach or learn, because the brain controls our senses. Neuroscience is the scientific study of the nervous systems. The role of neuroscientists is to study the brain and nerve cell which are core components for behavior and cognitive functions. In the fast-growing field of education has increased the importance of neuroscience and psychology in education. According to David Crystal, the front part of the parietal lobe involves in the process of sensation and connected to the speech and auditory areas. This area especially involves in motor functioning of speaking and writing. The upper back part of the temporal lobe is called as Wernicke's area which plays major role in the comprehension of speech. And the lower back part of the front lobe involves in decoding of speech which is called as Broca's area. The other prominent area of the brain towards the back of the frontal lobe involves in the motor control of writing and reading is called as Exner's center which was identified by German neurologist Sigmund Exner (1846-1926).

Rajendra Babu Vemuri points out the process of encoding ideas in second language depends on neurological process in the brain. Here the brain receives and analyze the information. The thinking part of the brain is called the cerebrum with four divisions or lobes. They are mainly the frontal, temporal parietal and occipital lobes. The Broca's area in the in the front lobe plays a pivotal role which was located at the front side of the brain associated with motor skills during the production of productive skills.

Satvinder Singh et al.: According to them neurological disorders in learning are not identified till their adulthood. Neurological impairments were identified mostly in reading, written expression or mathematics.

As Lesley Lanir reminds us, the brain billions of neurons, most of them are not connected properly each other. Messages are usually transmitting from one neuron to another neuron through electrical and chemical transmitters which is called as neurodevelopment function. The brain creates new connections between neurons and it also makes strong existing pathways in the brain. When it gets new information or we practice rigorously. The brain is wired distinctly with strong connections or in some cases with misconnections. As a result, language learners are facing trouble in attention, remembering, encoding and decoding.

According to Meredith Cicerchia, dysgraphia and dyslexia are motor skills. If there are any difficulties in functioning of motor skills, children face difficulty in organizing as well as planning writing practice. International Dyslexia Association expressed that children who are facing problem with handwriting may likely have Attention Deficit Hyperactivity Disorder (ADHD)

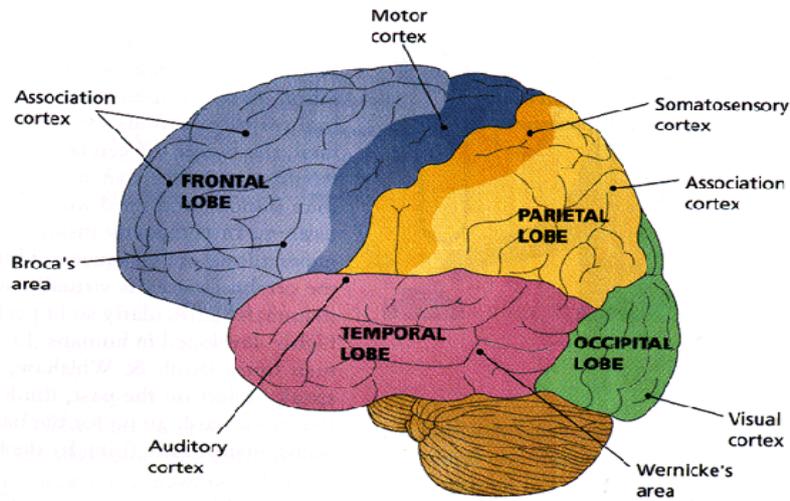
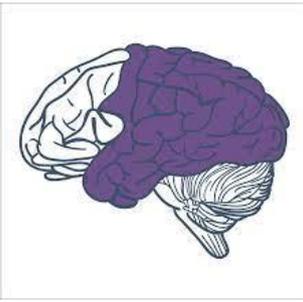
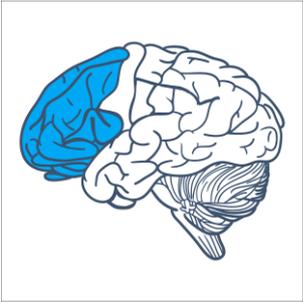


Figure.1

**Networks for Learning**

The primary purpose of networks in brain is to acquire language skill. The formation and the sequence of one's ideas depends largely on three primary classes of networks. They are Affective networks, Recognition networks, Strategic networks.

 <p><b>Affective Networks</b></p>	 <p><b>Recognition Networks</b></p>	 <p><b>Strategic Networks</b></p>
<p><b>Function:</b></p> <p>Affective networks monitor internal and external environment to set priorities, to motivate and to engage learning.</p>	<p><b>Function:</b></p> <p>Recognition networks that sense and get information from environment into usable knowledge.</p>	<p><b>Function:</b></p> <p>Strategic networks plan, organizes and initiate actions.</p>

## Figure. 2

All the above mentioned networks are different from each other in their functioning. According to Hall (1998), Anatomists study basic level of central nervous system and they segregated neurons into three categories. They are sensory neurons, motor neurons and interneurons neurons. Receptive sensors neurons bring information into the neurons system; motor neurons carry information from nervous system to action by stimulating muscles. Whereas interneurons represent current state of the organism. So, all these plays crucial role in learning any language. It is not only confined to neuroscience but also related to educators, psychologists. They also proposed the same ideas. There are several language learning disabilities are associated with the functioning of the brain like Dyslexia, Dysgraphia, autism also ADHD etc. Dyslexia is a learning disability that affects our brain in processing written language. Similarly, Dysgraphia is another disability which affects learners when they transform ideas into written language. ADHD is neurodevelopmental disorder that affects learning process in most of the learners. It is the result of disorder in the process of brain function and formation of brain structure. Prefrontal cortex is responsible for executing cognitive functions like attention, planning and working memory. ADHD shows tremendous impact on decision making, planning, attention and working memory. Learners with ADHD may have weaker connection with other neurons in the brain or may be less active in function.

### Methodology

The researcher has used ADHD questionnaire which is widely used checklist to identify symptoms of ADHD. It is a self-report scale developed by World Health Organization (WHO) along with the team of Psychiatrists as well as researchers. It is only a screening tool, but not comprehensive report of learner's mental health. It is advised that a teacher should conduct screening test by using ADHD questionnaire and refer them to a healthcare professional for in depth case study.

In addition to questionnaire, the researcher has also interviewed Psychologist Ms. Shabana Azmi, VFSTR (Deemed to be University), Gunter. She has recommended some changes in life style and practices in learning and remembering the things.

### Data Analysis

The researcher has given the questionnaire to 109 students to identify whether students have symptoms of ADHD. Surprisingly, these students were not diagnosed till their Under-graduation level. There are 24 students found with symptoms of attention-deficit hyperactivity disorder.

Q. No.	(Part-A)
1	How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?
2	How often do you have difficulty getting things in order when you have to do a task that requires organization?
3	How often do you have problems remembering appointments or obligations?
4	When you have a task that requires a lot of thought, how often do you avoid or delay getting started?
5	How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?
6	How often do you feel overly active and compelled to do things, like you were driven by a motor?

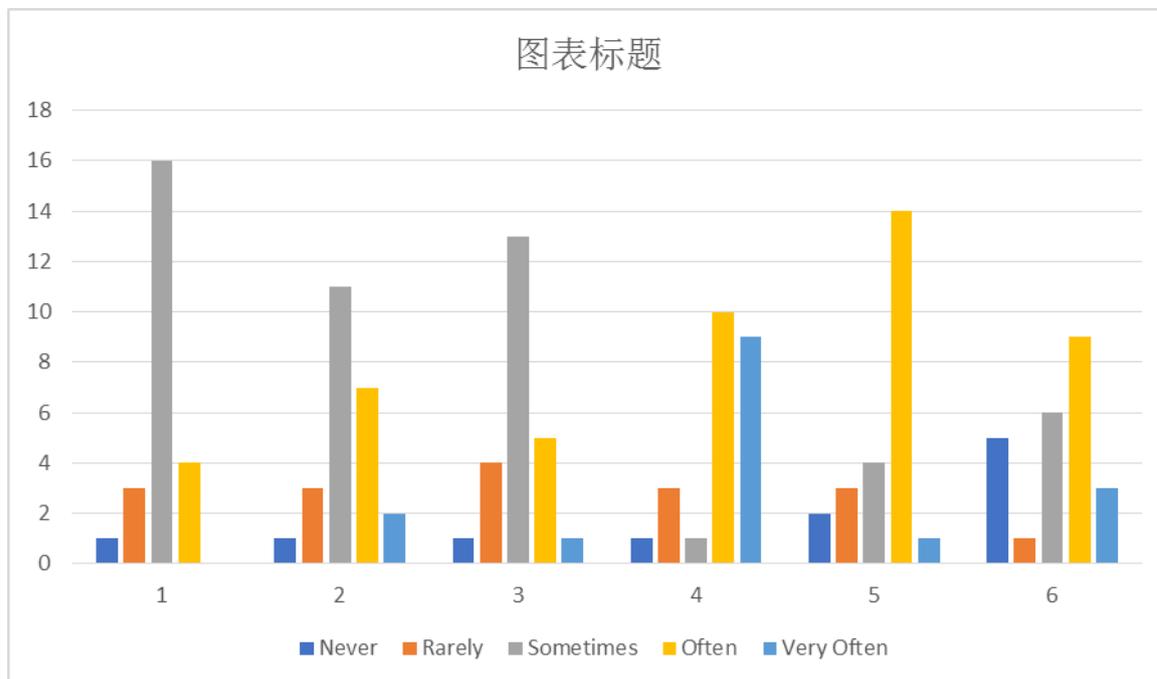
#### Adult Self-Report Scale-V1.1 (ASRS-V1.1) Screener

Q. No.	Never	Rarely	Sometimes	Often	Very Often
1.	1	3	16	4	0
2.	1	3	11	7	2
3.	1	4	13	5	1
4.	1	3	1	10	9
5.	2	3	4	14	1
6.	5	1	6	9	3

**Table. 1**

Note: Total number of students participated: 109

Total number of students have ADHS symptoms: 24



Based on the above table majority of the learners are not able to come to conclude to finalize any task. There are 16 out of 24 having this trouble and there is no one is exempted from this problem. For second question, out of which 11 students are facing problem in organizing the things properly to complete the task. There is only one student identified without this problem. Next, most of the learners were reported that they are not able to remember or appointments or responsibilities in time due to lack of focus for the third question, here only one student opted 'never' out of 24. For the fourth question, 10 students reported as they often avoid and delay to start any task when it requires lot of thinking and attention. More or less, 9 students have mentioned 'very often' they face this problem. However, there are 14 learners mentioned that they often have no stability in sitting for long period in sitting or concentrating on any topic. On contrary, there is only one student has marked as 'very often' for the fifth question. Finally, 9 students reported that they act impulsively without control when doing any work or involving in any activity.

Therefore, the researcher has identified the learners with ADHD due to neurological dysfunction and consulted Psychologist Ms. Shabana Azmi, Psychologist, VFSTR (Deemed to be University) to mitigate ADHD symptoms among the learners of ESL classroom.

**The following is the interactive session between the researcher and the psychologist:**

**Researcher:** Good morning, Madam! I have identified some of the students are not able to complete the given tasks intime. They are not able to focus to finish the task due to and simply wasting time with no attention. Later, I tried to check whether they have ADHD symptoms or not. Surprisingly, there are 24 students diagnosed symptoms of attention deficit hyperactivity disorder. Is here any other

assessments or diagnostic test to identify the symptoms of ADHD?

**Psychologist:** ADHD is one of the common problems in students. It is a neurodevelopmental disorder. It is not curable but it is manageable. Usually, these students have birth related issues or genetical disorder. It is not that much problematic issue. Learners with this problem don't interact with others easily. We need to monitor them and identify if there is any abnormality in their behaviour or action. It is good to consult a professional psychologist to suggest some remedies.

**Researcher:** Madam, do you suggest any treatment or medication to overcome this problem?

**Psychologist:** It depends on the seriousness of the problem and varies from person to person. If the issue is very serious, it is better to approach expertise psychiatrists. They can treat and can suggest medicine. If it is not serious, therapies will definitely work out and can manage this disorder.

**Researcher:** Okay, as you said, which therapy will work out and who is right person consult?

**Psychologist:** Behaviour therapy will be the best option to treat ADHD symptoms because it can improve student's behaviours as well as to complete works organized and to plan any task properly. It should be done under the supervision of physiotherapist near to your living place.

**Researcher:** Madam, how to make some modifications in life style to manage this problem?

**Psychologist:** As far as a person with ADHD symptoms, the right brain works actively rather than left brain which control the process of language function, sentence construction, reading and writing etc. whereas the right brain controls visualization, creativity, arts and adventurous etc. Therefore, it is advisable to make them involve in skill-based activities rather than logical.

In addition, yoga and breathing exercise will give better results to manage hyper activity disorder if they make it as part of daily life. Apart from that, taking sufficient warm clean and warm water at empty stomach is the best practice and it boosts our brain actively by supplying Oxygen to the brain.

**Researcher:** What is the role of parent- English teacher to support children with ADHD symptoms?

**Psychologist:** As a parent or as a teacher, there should be more attention required to shape student's career. Parents should not penalize or manhandle them because of their problem. Parents must develop good rapport with them and create trust. This kind of students don't believe others easily. Without understanding their intelligence, it is not good to treat them differently.

Importantly, teachers should not insult them in front of their classmates. Usually, these students are lethargic in the classroom and try to procrastinate the work until last minute because they can't concentrate for long time to understand concepts. They require extra care from parents and remedial classes along with timely appreciation from teacher. Teacher has to focus on cognitive and behavioural challenges during teaching English for Second Language Learners.

If we ignore them, they become idle, fly like a kite without string.

Ms. Shabana (Psychologist) also opined that there is a lot of scope for them to flourish in designing, architecture, marketing, sports and creative arts etc. There are so many people became famous despite of attention deficit hyperactivity disorder like Albert Einstein, Bill Gates, Simone Biles, Steve Jobs,

Walt Disney, Danial Radcliffe, Alia Bhatt, Britney Spears and Emma Watson etc. All these people attained highest level and become famous in their interesting fields.

### Conclusion

Therefore, neurodiversity is not a myth, it is the need of the hour to identify the students who have ADHD symptoms and show them right path to settle in their personal as well as professional life. It is a collaborative effort to create amiable environment to develop trust on us. Teachers have to design task-based activities to involve them in learning with peer groups. Moreover, motivational and student centric activities should be required to strengthen behavioural and cognitive challenges during teaching English for Second Language Students with Attention Deficit Hyperactivity Disorder (ADHD).

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