Identifying Attention Deficit Hyperactivity Disorder (ADHD) Children and Effective Teaching Strategies That Develop Their Multiple Intelligences

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Abstract: Many of us sometimes fail or misinterpret ADHD children by not understanding fully their traits and symptoms. As a result, many ADHD children are viewed as marginal students at school since they can’t meet academic standards. Thus, the purpose of this study is to identify ADHD traits and implement effective teaching strategies for ADHD children which can develop their multiple intelligences. Knowing and applying effective methods and strategies for teaching ADHD children are very essential for them to achieve academic success. Therefore, through this research hopefully, teachers can identify ADHD children and implement effective teaching strategies that can develop multiple intelligences for ADHD children optimally. This research is qualitative research with a literature study approach. The results of this research are characteristics of ADHD and effective teaching strategies including assessment and tools that can be used in a classroom that can help to develop 9 multiple intelligences.

Abstrak: Kebanyakan dari kita tidak mampu mengenali anak ADHD dari gejalanya sejak dini. Hal ini berakibat banyak dari anak ADHD dikucilkan di sekolah karena mereka tidak dapat memenuhi standar akademis sekolah. Oleh karena itu, tujuan dari riset ini adalah untuk dapat mengenali ciri-ciri karakteristik dari anak ADHD dan menerapkan pembelajaran yang efektif yang dapat membangun kecerdasan majemuknya secara optimal. Penelitian ini adalah penelitian kualitatif yang dilakukan melalui studi Pustaka. Hasil dari kesimpulan penelitian ini adalah cara mengenali karakteristik anak ADHD serta pembelajaran yang efektif termasuk penilaian dan perangkat yang digunakan agar dapat membangun 9 kecerdasan majemuk yang mereka miliki di kelas.
A. Introduction

The analogy of a child’s potential can be associated with a rainbow. The reflection of a rainbow depends on the amount of light and raindrops. If a rainbow is not seen from the correct angle or perspective, some of the beautiful colors might not be seen at all (Cloete, 2005). On many occasions, Attention-Deficit/Hyperactivity Disorder or ADHD children are often failed to be identified or recognized in their early stages. ADHD children are often underestimated and neglected as their true potential learners and perceived in a negative perspective (Nelson, 1998). These negative perspectives bring contributions to the fact that ADHD children are frequently labeled as low achievers with disruptive behaviors which are mostly related to disciplinary problems. They are usually misinterpreted as merely problematic students who have disciplinary issues. Their misbehaviors such as being aggressive, easily distracted, unable to finish tasks, misplacing items, speaking too much, and doing risky behavior such as starting arguments or fights have somewhat drained teachers’ attention and exhaust them. Consequently, it leads to a reactive frame of mind and responses from teachers which worsen and make it hopeless for ADHD children to get proper treatment and support. Somehow, for some cases, the signs of ADHD can be mild or subtle to spot while for others the symptoms are severe and disruptive. Once parents or teachers misidentify or fail to recognize the symptoms, it can pose challenges and struggles in their later life such as their personal relationships, career, and emotion. Without having awareness and the right treatment or support about 30%-70% of ADHD children will show the symptoms of disorders in adulthood such as aggression, learning difficulties, and emotional social skills (Najafi et al, 2017).

According to Taylor (2006), children with ADHD don’t mean that they lack intelligences, many are having their own special abilities or ‘smarts’. Therefore, it is important that teachers and parents should have proper knowledge in understanding the symptoms of ADHD children so that they can help them to overcome their learning difficulties and achieve their maximum potential through effective teaching strategies.

Teaching strategies are playing an important role to the extent of setting the quality of learning that can meet the needs of ADHD students. Teachers are the central leader in the classroom to influence the learning, motivation, and behavior of their students to take place. Based on Cooper & McIntyre (1996) characterized effective teaching and learning by 1) Proper engagement that enables students to have sense a of occupancy of learning outcomes. 2) Students have opportunities to adapt and assimilate new knowledge with prior knowledge. 3) Conducting various approaches and techniques. 4) Reactive teaching, able to adjust learning objectives to foresee and facilitate the needs of students during that period.

“It is of the utmost importance that we recognize and nurture all of the varied human intelligences, and all of the combinations of intelligences. We are all so different largely because we all have different combinations of intelligences. If we recognize this, I think we will have at least a better chance of dealing appropriately with the many problems that we face in the world” - Howard Gardner. Garner’s theory of Multiple Intelligences (1983) provides a theoretical framework for
teaching approaches that can aid and strengthen ADHD children’s learning which gives a positive contribution. Garner believes that IQ is not the only way to describe an individual’s intelligence, on the contrary, someone can have more than one intelligence. According to Gardner, there are 9 Multiple Intelligences (MI) that can be developed through effective teaching strategies. By implementing MI theory ADHD children who have difficulty achieving success can enhance their scholastic achievement and their desire to learn (Armstrong, 1994). Based on the stated problem, the author would like to analyze further by identifying the symptoms and characteristics of ADHD children so that the teachers can recognize them early and provide them with effective teaching strategies that can develop their Multiple Intelligences. By identifying and developing their stronger intelligence can benefit the ADHD children that will make ADHD children successful in their academic studies and prepare them for productive and meaningful adult life.

B. Method

The method of this research is based on a qualitative study which is conducted by doing literature or library research. Qualitative research is a study about a topic that is commonly made to understand experiences of people’s perspectives when one wants to learn more about it and usually generate new hypotheses and theories (Jhonson & Christensen, 2014). This research was also conducted by compiling data from articles, books, and available journals which have been published. The steps of the research method can be summarized as follows:

![Diagram of research method steps]

The primary sources of data collection for this research are from the following books, “12 Principles for Raising a Child with ADHD” by Russel A. Barkley in 2021, “Frame of Mind” By Howard Gardner in 2011, and “ADD / ADHD Checklist, A Practical Reference.” The secondary sources are Multiple Intelligences in Classroom by Armstrong (1998 & 2000), and “The ADD/ADHD Checklist; A Practical Reference for Parents and Teachers” by Sandra F. Reif in 2008. The analysis data which is used is the interactive analysis by Miles and Huberman, there are 4 steps: data collection, data reduction, result, and conclusion (Miles & Huberman, 1994).
C. Result and Discussion
   Identifying ADHD

ADHD or Attention Deficit and Hyperactivity Disorder which is before well known as ADD (attention deficit disorder) has affected 3 to 6 percent of school aged children and mostly they are boys (Tannock, 1998). It is affecting 5%-8% children globally, it means that there is 1 ADHD child in every 15-20 people (Barkley, 2021). ADHD was simply recognized as a behavioral problem not until few decades ago researchers managed to discover that it is more related to a malfunction part of brain which impact cognition and behavior (The development of ADHD symptoms usually begins during age 3 or 4 years meanwhile other study suggests some of them can begin at age of 5 or 6 years (Anastopoulos, 1999). There is no certain single diagnose for ADHD, thus only certified mental health professionals are allowed to carry out the diagnoses. According to CDC (Central for Disease Control and Prevention), there are typical criteria of ADHD such as:

1. Inattentive; often fail to focus and concentrate, easily to get distracted, talk excessively, doesn’t seem to listen, forgetful, disorganized, have trouble in time management.
2. Hyperactive and Impulsivity; often fidget, unable to remain seated, often run or climb restlessly, impatient to wait for their turn, often interrupt and disrupt of others, easily to get angry.

As a result, based on the above symptoms, there are 3 types of ADHD:
1. Inattentive
2. Hyperactive
3. Combination of both

The study shows that ADHD brain compared to normal brain. According to Barkley (2021) “ADHD is not just a disorder of attention. It is essentially a disorder of self-regulation. To put it more completely, ADHD is a neurodevelopmental disorder of self-control and executive functioning” Barkley emphasized ADHD is not merely a disorder of attention but it’s a neurological disorder of the front lobe of the brain that inhibits one’s due to the failure of executive functions to relays messages. 3 – 10% of ADHD brain is much smaller compared to the normal brain of their peer’s age level as well as 2-3 years they delay in maturation (Barkley, 2013)

![Comparison of Normal Brain to ADHD Brain](Barua et al, 2022)
Comparison of a normal brain to an ADHD brain has several differences in frontal and parietal cortices as well as the volume of the brain which as a result makes ADHD children hard to pay attention to and tend to be hyperactive (Barua PD, 2022). Many researchers are still trying to figure out the cause of ADHD. The cause of ADHD is merely either genetics or psychosocial interplay (Hughes & Cooper, 2007). A single cause is still debatable. There are interesting facts about ADHD. While they are found to have an inattentive disorder which is difficult in paying attention to be focused on things, ADHD children can be hyperfocus too. They can engage and get drawn into video games, and TV programs that deeply attract them (Barkley, 2021).

Teaching Strategies
Prior to teach children with ADHD, there are general strategies for the teachers to make things simple to help the children with ADHD to succeed (Garland, 2014).
1. Minimize distractions from the environment. It is essential for the teachers to prepare classroom management at the very best since ADHD children are prone to get distracted easily.
2. Establish ground rules to help the children with ADHD succeed in completing their work and responsibilities.
3. Have demands limitation on the children, it means do not ask them to do something that they are not capable of. It is suggested to break down tasks into smaller portion. In addition, do not talk more than that you need to. language doesn’t really work well for controlling their behaviors as part of their brain which has a function to relate language for guiding their behaviors do not interact well. Therefore, just using gentle touch and see them directly in the eyes can personalize your affection towards them, then briefly say something which needs to be said (Barkley, 2021). The four-squared method by Eisenhower grid will help to determine the priorities that the children should have done so that unnecessary conflict can be avoided (Barkley, 2021).

Table 1. Four-Squared Method Eisenhower Grid

<table>
<thead>
<tr>
<th></th>
<th>URGENT</th>
<th>NOT URGENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPORTANT</td>
<td>QUADRANT I</td>
<td>QUADRANT II</td>
</tr>
<tr>
<td>Urgent and</td>
<td>Urgent and important</td>
<td>Not urgent but important</td>
</tr>
<tr>
<td>important</td>
<td>DO</td>
<td>PLAN</td>
</tr>
</tbody>
</table>


These squares can be interpreted as the following:

a. **Do**: These are the things that have great importance and immediate action, therefore the priority needs to be done.

b. **Plan**: These are the things that are important but have somewhat less sensitive time.

c. **Delegate**: These things are considered to have less urgency therefore assigning some tasks to other children/teams it may bring benefit to teachers.

d. **Eliminate**: These are things that do not have urgency and importance therefore they should not be pursued further.

### Teaching Strategies that Develop Multiple Intelligences

There are 9 Multiple Intelligences proposed by Howard Gardner, that can be developed through effective teaching strategies for ADHD children, they are as the following:

1. **Linguistics Intelligence**, those who have this ability it means, they are sensitive to the meaning of the words and able to manipulate language to communicate effectively. They enjoy using words in speaking or writing successfully. Those who have this ability learn best through verbal, auditory, and visual writing.

2. **Logical-Mathematics Intelligence**, those who have this ability can use and apply numbers effectively. They are very skillful in calculating numbers and able to analyze things abstractly. They can learn best through numbers, calculating, ordering, classifying, questioning, and experimenting.

3. **Visual-Spatial Intelligence**, this ability enables an individual to visualize things through pictures, graphs, and sites accurately. Children who have this ability are very good at designing and shaping 3D models. They are so creative in bringing out ideas by imagining things through shapes, colors, and pictures (Armstrong, 1996). They can learn best through colors, shapes, space, and drawing.

4. **Musical Intelligence**, this ability enables the individual to convey music to their emotions. Those who have very good musical skills such as playing musical instruments, singing, and composing songs usually can be discovered at an early age.

5. **Kinesthetics Intelligence**, this ability enables an individual to perform and create something through bodily movement through dances, athletic, and good making gestures. They are very good at controlling and manipulating things through body movement.
6. **Intrapersonal Intelligence**: Those who have this ability can understand, contemplate, and look into oneself every action and situation that happens very well. They are capable to control their own feeling, they enjoy being alone for doing self-reflection.

7. **Naturalist Intelligence**, this ability enables an individual to perceive and appreciate the beauty of nature and be able to pour in one’s creation. They learn best related to flora, fauna, and the environment. They enjoy staying outdoors and people with this ability are more likely to preserve the environment and sustainability.

8. **Interpersonal Intelligence**, this ability enables an individual to maintain relationships effectively with peers and others, able to make distinctions on moods, intentions, and feeling, and able to display empathy towards others. They can work best with teams.

9. **Existential Intelligence**, this ability enables an individual to retrieve the meaning of life philosophically. Thinking about the things that circulate the world such as good, evil, or even about death. They can visualize and plan things within a bigger picture.

According to Armstrong (2000), it is important for all teachers to understand and apply the 9 multiple intelligences to support ADHD children’s intellectual development. He suggests that the following teaching strategies can be implemented to develop their multiple intelligences. Here are some of the strategic approaches that can be implemented in teaching children with ADHD that can help to develop their multiple intelligences.

1. **Developing Linguistics**
   It is estimated that around 25-50% of ADHD children have language learning disabilities and the most common one is dyslexia (Rief, 2018). Thus, the teacher can set up some reading strategies which can make the student actively engage throughout the reading process for example through storytelling and poetry. The teacher can also use fun materials and tactile strategies such as writing the spelling of a word on the sand, finger paint, and using colorful or glitter pens. Using the phonics method for learning to read can be useful for ADHD children during the early stage of learning to read. In addition, the teacher needs to establish a reading routine, and provide books that can be brought home. Next, the teachers also can use the answering card method, after each question the teacher will ask the children to write it down directly and hand it one at a time so that it becomes a smaller and less painful task for them (Rief, 2008). Dubey & O’Leary (in Hughes & Cooper, 2007) another strategy that can be applied is to allow them to read aloud this can help to build their reading comprehension better than silent reading.

2. **Developing Logical Mathematics**
   To develop logical Mathematics the teacher can use several ways as using manipulative aid, board math games, and computer math games will help ADHD children to comprehend the basic concept of math easier. Working through concrete or mnemonic will make them engage more on the subject (Rief, 2018). In addition, the teacher also can trigger the children’s higher-order thinking by using classifying and Socratic questioning methods.

3. **Developing Visual-Spatial**
According to Kurtz (2006), visual problems and other learning disabilities are commonly found in ADHD children. This vision problem causes them difficulty in learning how to read, write, and interpret pictorial symbols such as graphs, maps, and charts. To develop their visual-spatial ability teachers may gear visual signals, use pictures, videos, visual timers, idea sketching, and concrete problem-solving. The teacher can use pictures or icon behavioral cues or hand signals for addressing their inappropriate behavior, so that the teachers do not need to use verbal reminders all over again. Setting the non-verbal signal will make the reminder more private so that it can prevent embarrassing the child in front of his peers.

4. Developing Musical
Some strategies to develop musical abilities for ADHD children, the teacher can use songs to sing, chants, clapping hands, and making noise makers to create rhythm or with musical instruments like piano or xylophone within lessons. Moreover, using instrumental music or super memory music instrument will make the class transition go smoothly between lessons (Rief, 2018).

5. Developing Kinesthetics
Children with ADHD are having a greater preference for doing physical activities compared to children who do not have ADHD (Zentall & Smith, 1992). Somehow, ADHD children are found to have problems with their motor skills or coordination movement. Some activities such as aerobics including running, skipping, jumping, dancing, and catching balls will increase their flexibility (Greenspan, 2009). Some movement activities are essential for them as they need to release their energy as hyperactive types of children. Using fidget or stress balls, and yoga will be beneficial for them to release the tension. Assigning some tasks such as passing out the paper and sending them to the office to get something will be good for them. ‘Brain break’ and exercises are needed each time as well after some periods. The teacher can set up role-play or drama in some lessons too so that the lessons will be more interactive.

6. Developing Interpersonal
ADHD children may easily overwhelm and get frustrated organizing their assignments. The teachers can assign a peer role model or buddy to assist them to understand academic concepts related to schoolwork rather than just observing them doing it alone. The teachers can set up some teamwork or learning teams together to enhance their social skills too (Young & Smith, 2017) therefore setting up peer sharing, group work as well as using board games within lessons will be beneficial for increasing their interpersonal intelligence.

7. Developing Naturalist
Doing nature walks and gardening becomes one of the activities that make ADHD children release their tension (Taylor, 2006). Based on a recent study case, it is reported that children who have several activities with dog participation inside the classroom or outside during 3 subject lessons such as physical exercise, drama, and language have
shown significant improvement in ADHD severity within 1 year (Juríčková et al, 2020). Giving the children a chance to take care of pets in the classroom is proven to be effective to reduce their aggressiveness.

8. Developing Intrapersonal

To develop intrapersonal intelligence, there are several steps that can be used:

- **Self-Regulation**

  The children can use the external strategy like setting up alarms or reminders for their daily schedule or task. Create a routine, for example, morning or afternoon activities. Give extra points if they can consider doing them without being reminded. Enhance *learning to wait* as part of self-control. The teachers can set up a visual timer in front of them. For example, the teacher can put cookies and ask them to wait 5-15 minutes. The teachers can let them have it when the alarm goes off (Garland, 2014).

- **Positive Feedback & Rewards**

  Since children with ADHD tends to have a motivational deficit and run out of fuel faster than children who do not have ADHD. Frequent positive feedback and rewards play an important role as they can boost them to finish the tasks. Use a picture of the reward so that it can deliberately help them to visualize concretely then the teacher can suggest how it feels good when they have completed the task and enjoy the reward (Barkley, 2021).

- **Self-Talk**

  When the student loses control due to his or her impulsivity and aggressive behavior, they can use some techniques such as self-talk which can help them to manage their emotion for example “I am calm and in control” whilst doing that they can do deep breathing, counting slowly to relax their mind. Self-talk is also useful for them to recall the instructions which are given and slow down their fast brain, hearing it gives them time to process information (Garland, 2014).

9. Developing Existential

- **Meditation mindfulness**

  This method is simple, the teachers and children can do it in a quiet room. Ask the students to sit comfortably, ask them to pay attention to their breath and count them to stay focus around 15-20 minutes. For the first timer, it can be done within 5 minutes and the teachers can gradually increase the time over the next meeting.

- **Self-Reflection**

  The teacher can use 10 minutes of work and 3 minutes of recess time as children with ADHD are prone to get bored and lose their interest in doing tasks. For 3 minutes recess, they can utilize their time to stay at the corner paying attention to the fishbowl or observing something that they like, this too can be used for self-reflection (Barkley, 2021).
## Table 2.
Summary for Teaching Strategies that Develop Multiple Intelligence for ADHD Children

<table>
<thead>
<tr>
<th>Multiple Intelligences</th>
<th>Teaching Activities</th>
<th>Assessment Activities</th>
<th>Material / Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linguistics</td>
<td>Storytelling</td>
<td>Reading skills checklist</td>
<td>Fun worksheet materials, phonics books, answering cards.</td>
</tr>
<tr>
<td></td>
<td>Poetry</td>
<td>Make a tape recording/video for storytelling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Answering cards</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read aloud</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phonics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logical-Mathematics</td>
<td>Concrete aid</td>
<td>Math skill problems</td>
<td>Manipulative aid, board games, and computer math games.</td>
</tr>
<tr>
<td></td>
<td>Classifying</td>
<td>Classifying Charts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Socratic Questioning</td>
<td>Experiment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ideas sketching</td>
<td>Mind map</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Concrete problem solving</td>
<td>Build a model from clay or 3D</td>
<td></td>
</tr>
<tr>
<td>Musical</td>
<td>Singing/chanting</td>
<td>Create a song or rhyming</td>
<td>Songs, music instruments, instrumental music, bell for a sign/reminder.</td>
</tr>
<tr>
<td></td>
<td>Noise maker</td>
<td>Play musical instruments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Super memory music</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kinesthetics</td>
<td>Aerobics</td>
<td>Performance demonstration</td>
<td>Aerobics, fidgets/stress ball, mattress, props.</td>
</tr>
<tr>
<td></td>
<td>Dance</td>
<td>Drama</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yoga</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Role-play</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Peer Sharing</td>
<td>Share with a friend</td>
<td>Board games, props, thematic materials.</td>
</tr>
<tr>
<td></td>
<td>Board Games</td>
<td>Write a letter to a friend</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group Work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naturalist</td>
<td>Nature Walk</td>
<td>Ecological project</td>
<td>Plants as props, dogs or puppies, dog food, and treatment tools.</td>
</tr>
<tr>
<td></td>
<td>Gardening</td>
<td>Photo or video of nature’s collection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dog Assistance</td>
<td>Dog treatment and care</td>
<td></td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Self-regulation</td>
<td>Personal Journal writing</td>
<td>Charts for rewards, reward cards, schedules.</td>
</tr>
<tr>
<td></td>
<td>Positive feedback &amp; rewards</td>
<td>self-assessment checklist</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-talk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intermittent work and break</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Existential
- Meditation
- Self-reflection
- Self-reflection journal

Discussion

Based on the discussion above, the example of MI teaching strategies is generally practical and suitable for primary students. This study concludes that MI theory is so remarkable. It provides a wide range of methods, techniques, programs, tools, and strategies yet it doesn’t represent a rigid and specific program that is to follow. In other words, it always encouraged each teacher to develop his or her own unique approach to implement them so that they can have the best version of their own teaching strategies that can develop Multiple Intelligence of ADHD children. The fact many examples of successful implementation and warmed welcomed of MI theory around the globe such as in Australia, Bangladesh, Canada, China, Denmark, Ireland, and the Netherlands which accommodate special learners (Armstrong, 2008). Therefore, it is imperative that educators and teachers especially those who recognized ADHD children should apply MI theory in their teaching strategies to embrace and discover ADHD children their unique capabilities.

D. Conclusion

According to this literature research that has been conducted by the author. The author has found the facts that there are ways to identify ADHD through their traits and characteristics. By being able to identify their characteristics and symptoms, teachers can set up various techniques for teaching strategies in the classroom that can nourish and develop their Multiple Intelligences. In most cases, a combination of teaching strategies is needed to get the desired result. Thus, by implementing effective teaching strategies academic success can be possibly achieved for ADHD children later. Further reading and studies from this research are necessary to expand more on proper teaching strategies for ADHD children which hopefully will guide and bring them into the light.

References


