



## ADHD and Giftedness and the role of ICTs

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### Abstract

The focus of this paper is to take a bibliographical look at the existing research concerning students who are considered to be twice exceptional. The specific aim is to find and analyze the most prevalent data available up to the present time of this writing regarding children who possess characteristics on both sides of the learning spectrum, namely students who are regarded as charismatic or gifted, but have also been diagnosed with ADHD. This paper attempts to find methods to aid in the recognition of the characteristics of these students, try to offer different possibilities regarding schemes and techniques in the way of diagnosis. Finally, certain approaches to successful treatment will also be suggested.

### Keywords

ADHD, gifted children, twice exceptional students

### Introduction

More and more in recent years, there seems to be a greater attempt to provide inclusion for all types of students in the general classroom. Due to this endeavor, public schools all around the country are putting together classes with students of different skill levels, speeds and competences. This means that there is great diversity in the abilities and capabilities that exist within a single classroom, leading to the fact that children with significant learning difficulties and others with extraordinary potential coexist and receive education within the same group in their schools.

Having these varied and disparate characteristics within the student body may be challenging enough, finding them coinciding in a solitary individual student can prove even more difficult to find compatible and effective strategies to ensure effective learning. In the event that these adverse characteristics reside within the same individual, this person is considered to be "twice exceptional". Twice exceptional students may be particularly talented, charismatic, or gifted in many fields and quite often achieve high performance in their educational undertakings while at the same time possessing one or more special needs, learning difficulties or a type of disorder (Brody & Mills, 1997).

The dual nature of these children makes their very lives a challenge from most standpoints. This delicate essence of their individualism is an aspect which cannot be overlooked when trying to incorporate these students into our schools. It is imperative to remember that the discrepancies between the strengths and the weaknesses that appear in twice exceptional students can cause them to have detrimental effects on many facets of their lives, as much inside and outside of their school existence. Not catering adequately to these characteristics can lead to social, emotional, and behavioral problems.

One such category of twice exceptional students are those who possess an exceptional intelligence quotient, and are considered to be overall gifted children but at the same time require some sort of special education due to learning difficulties they face. In many such cases, students of this nature may not achieve a performance in congruence to their fullest potential.

With the passage of the Education for All Handicapped Children Act of 1975 the focus of education was placed on students with disabilities to a much more significant degree, which then turned the proverbial flashlight on gifted students with coexisting disabilities. When the Individuals with Disabilities Education



Improvement Act was passed and then amended in 2004 the measure of the individual twice exceptional student's development was typically considered to be the grade that this individual achieved. This of course may not be the best and most characteristic measure of the student's actual progress.

It seems quite obvious that with twice exceptional learners the educator needs to perform careful managing of the teaching material and to create, model and follow specific teaching strategies which will cater to the specific needs of these students, not only in the attempt to discover and diagnose these special characteristics but also to better fulfill the distinctiveness of their learning profiles. One of the main difficulties that the educator faces in the classroom in the endeavor to teach gifted students with ADHD is the fact that it can be very difficult for one to recognize and differentiate between the individual characteristics of each case. Many times the accompanying aspects of giftedness in one child can lead one to surmise that the child has ADHD and vice versa. Because of this it can be quite easy and common to misdiagnose a student with something other than what disabilities they actually possess.

### **Identification Considerations**

According to many reputable researchers (Johnson, Karnes & Carr, 1997; McCoach, Kehle, Bray & Siegle, 2004; Nielson, 2002; Silverman, 1989) who have conducted thorough research and written papers on the subject, a teacher identifying and recognizing the existence of twice exceptional students in their classroom is quite a complicated affair. Because of the varying and complex nature of the features that are present in these students, and the manner in which they tend to manifest themselves in the daily lives of these children, a very discerning eye and a compelling drive in the educator to locate them is necessary to distinguish them from the general population.

Identifying these students is necessary as much for the individual student's progress, as it is for the person charged with their education. Recognizing twice exceptional students in the classroom allows teachers to modify their teaching strategies and techniques in such a way that they can better benefit the specific group of students they are targeting. In order to achieve this, the diagnostician needs to take into account a wide variety of factors and information. The collection of data must be organized in such a manner that its sources are as diverse as possible. Just a few of the crucial aspects that need to be considered when attempting to determine the condition(s) of a child are the intelligence quotient that can be measured through standardized tests, achievement test scores and even creativity assessments which can be evaluated by a specialist.

There are, however, other elements that need to be considered when trying to figure out the strengths and weaknesses that are possessed by a student whom is suspected of being either gifted, having Attention Deficiency and Hyperactivity Disorder (ADHD) or both. An interview of the family members is an integral part of the diagnosis procedure. The relatives of the student can provide pertinent and vital information on the behavior and habits of the child which is being evaluated.

Teacher reports, peer referrals and portfolio assessments are also excellent tools that aid in the analysis and diagnosis of the student's abilities. By scrutinizing the information found in these papers, one can better be in a position to make a more accurate assessment of the student's performance, competences and difficulties.

When evaluating the scores of twice exceptional students it is important to remember that due to the special mitigating factors that influence the outcome of these performance assessments the resulting marks may be significantly lower. Since gifted students with ADHD have extraordinary talents they certainly have the potential to do very well on these types of examinations, however, the learning difficulties, weaknesses and hindrances they encounter as a result of their ADHD may reduce the final effect that their performance may have on the evaluation. The specific scores that are required to categorize a twice exceptional student as partly gifted need to be curtailed in order to compensate for these weaknesses so that undue discrimination can be avoided.

To assess a student definitively and meticulously it is not merely enough to rely on formal evaluations such as standardized intelligence or achievement tests. Informal type evaluations are necessary to be included in the diagnosis of a twice exceptional student. Classwork, homework, extra activities



accomplished in school or at home and other forms of tasks that have been carried out are prime examples of student production which are essential to the analysis of a child's actual abilities. Through the examination of these facets of the academic life of the individual, the teacher or diagnostician is in a much better position to gather important data for their capabilities.

Another important aspect that needs to be recognized in the identification of a twice exceptional student is the questioning of the family and relatives regarding the extracurricular activities that the child may be involved in. By taking into account the knowledge gained by these interviews a teacher may gain insight into the inner workings of the strengths and weaknesses that the student possesses. The educator, however, must remain especially vigilant in order to be in such a position as to perceive the subtle nuances that a student may portray regarding special talents or any learning difficulties that they may have. Without the teacher being endowed with this trait it is very likely that key characteristics of the student may be overlooked.

### **Comorbidity of ADHD and giftedness**

The coexistence of giftedness and Attention Deficiency and Hyperactivity Disorder (ADHD) in a student is a well documented situation and a common point of much study (Cramond, 1995; Reis & McCoach, 2002; Webb & Latimer, 1993). It appears that it is one of the most common diagnoses given in recent years (Barkley & Mash, 2003) and one of the most researched types of cases of comorbidity of disabilities in students (Brassett-Harknett & Butler, 2007) during their childhood years. Modern conceptualization of the description of this disorder characterizes it as a neurological disorder which is expressed as much in the cognitive functions of the individual (i.e. executive memory processes, functioning, planning and designing activities, et cetera) as in behavioral expressions (i.e. impulsive actions and reactions, hyperactivity, difficulty or inability to maintain attention focus, et cetera) and that these symptoms are expressed in such a way that there is a continuation and regular occurrence of them with an extended level of severity (Brassett-Harknett & Butler, 2007).

The reasons why a child may be born with ADHD can be quite varied and complex to detect accurately and definitively but many efforts have been made to provide satisfactory answers to what the causes may be. The fact that there is so much speculation on what factors contribute to the development of ADHD in a person is due to the complex nature of the disorder and the many elements that come into play in the realization of its attributes.

Because of the heterogeneous nature of the disorder and the continuous inflow of new data regarding it, the most likely conclusion is that the most significant aspects that influence the outcome of whether or not a person has ADHD are neurological, genetic (Hill & Taylor, 2001), biomedical, psychological, social and environmental in nature (Brassett-Harknett & Butler, 2007). Because of the common occurrence of comorbidity of other learning disabilities and behavioral disorders in a child with ADHD, it can be even more difficult to make a correct diagnosis regarding the nature of the student's actual disability (Cantwell, 1996).

The convergence and overlapping qualities of the special aspects of giftedness and the symptoms of ADHD have been adequately explored by the scientific community and the research that has come about as a result hints to the effect that twice exceptional students that fall into this specific category run an especially high risk of misdiagnosis (Chae, Ji-Hye & Kyung-Sun, 2003; Hartnett, Nelson & Rinn, 2004). The fact remains that even if the diagnosis is correct and the student is recognized to hold qualities of both of these fields, the determination of the practices and teaching strategies that are necessary to be implemented in order to maximize the child's academic performance is a crucial step in the educating process. It is necessary to tailor the design and approach to the learning of each child so that the desired results can be obtained. The method in which one charismatic student with ADHD is successfully reinforced can be emphatically different to what another needs to function with accomplishment. This is something which cannot be overlooked.

It has been observed that certain difficulties that children with ADHD who regularly deal with difficulties in focus face, may not be a factor which influences the successful learning of gifted children



with ADHD. A characteristic example of this is the heightened focus that charismatic children which have been recognized as having ADHD display when attending to or concentrating on an activity. In such cases, it has been discovered that these students tend to channel the extra energy and the general restlessness they possess into their devotion to the task they are confronting (Kaufmann et al., 2000).

### **Recognition and Characteristics**

It has been expressed that twice exceptional students share certain innate characteristics that make them more identifiable through close observation. These attributes have been detected and recorded by the previously referred to scientists (Johnson, Karnes & Carr, 1997; McCoach, Kehle, Bray & Siegle, 2004; Nielson, 2002; Silverman, 1989) who have conducted rigorous research on students who are both gifted and have ADHD. Most common among them is the high verbal ability that these individuals possess. The level that they achieve in verbal communication usually goes beyond the typical competence shown by students in general education. This by no means coincides with their written communication level. It seems that twice exceptional students are lacking in forming, expressing and maintaining consistent elevated performance when called upon to do written activities.

One of the most interesting conclusion that scientists were able to record regarding twice exceptional students is their noteworthy ability to observe and perceive situations and characteristics of people, animals and settings with great detail. Through the careful probing and testing of these students, researchers were able to determine that twice exceptional children were more apt to find differences and special singularities pertaining to objects or living beings that they encountered. This, however, seemed to come at a price. Gifted students with Attention Deficit and Hyperactivity Disorder displayed a lower level of memory capacity and had difficulty in dealing and successfully and effectively completing tasks that were based on memory abilities.

Students that are included in this category also tend to ask many questions and have an inquiring mind. Twice exceptional students often feel the need to "question everything". This urge can become all-consuming at times, to the point where the child needs to interrupt the learning process continuously in such a way as to feel that every query that has been posed has been answered to the child's satisfaction. The obvious result of this behavior is that the student may sometimes come across as rude, coarse, impolite and ill-tempered. In some cases, the child's behavior borders on insulting to the educator. In these instances the teacher must have the self-discipline and the restraint to handle the situation in such a way as to diffuse the moment and propel the learning development.

One of the greatest revelations that came through during the research that was conducted on twice exceptional children was the immergence of the dynamic imagination that they convey. These students were discovered to possess a divergent quality that described their fantasy faculties. This was found to be both a positive and - at times - negative trait that colored product whatever thoughts they yielded. Although "thinking outside the box" is generally considered to be a desirable feature of students in most cases, twice exceptional children, in certain situations, demonstrated a rationale and an idea-forming capacity that strayed at a distance from the usual criteria that a society deems logical or ethical. In any case, gifted students with ADHD showed a tendency to completely shatter the norms and go on to produce ideas which were completely genuine.

Twice exceptional students can be quite independent when left on their own. It does depend, however, on the specific circumstances that they are left in. When at the park, at home, or generally in situations that do not require any special skill set regarding communication, collaboration, or lengthy planning on their part they are especially capable of taking care of most instances that they are faced with. They can be left to their own devices which is a position in which they thrive. On the other hand, when they are at school they seem to require systematical and frequent support for the majority of their activities. These students seem to need the approval and assistance of the teacher in most aspects of their school lives, going so far as to request it when it is not readily offered to them.

When referring to gifted students with Attention Deficiency and Hyperactivity Disorder it is necessary to point out that they may or may not be aware of the actual nature of their specific diagnosis. In



any respect, regardless of whether or not they are aware of the explicit description of their special needs, they are in fact cognizant of the fact that they carry some inherent learning difficulties. Because of this, twice exceptional students are highly inclined to be somewhat oversensitive regarding their disability. It is during mentions or comments on this topic that they are likely to lash out verbally, or even physically, at classmates that mock, tease or ridicule them. Knowing the sensitivity that these students possess in this respect can help the educator stay attentive and vigilant to the special susceptibility that they display, and therefore help avoid harmful repercussions.

In many cases, twice exceptional children who are gifted and also have ADHD find it difficult to form meaningful and healthy relationships with their peers. Whether because of the impulsive behavior they display, the lack of communicative focus they exhibit, or any other reason, it has been shown that these students are constantly and significantly hindered when attempting to construct strong bonds and long-lasting associations with their classmates. This repeatedly results in these students becoming outcasts in their schools and resorting to anti-social behavior. The limited social skills that they possess frustrates them and impedes them in these efforts.

Not forming meaningful relationships notwithstanding, this is not to say that they are completely incapable of bonding with other children in their school. As a matter of fact there are countless examples of twice exceptional students fashioning a kinship with students who mostly exist on the fringe of academic society. It seems that gifted students with ADHD gravitate more than likely to children with less than optimal attitudes, and generally routinely approach classmates who display unacceptable conduct. During these encounters the twice exceptional students demonstrate leadership traits that more often than not culminate in capturing the dominating role inside the band of friendly associations that has been established. Thus, the individual frequently becomes the leader of a body of misfits, which further enforces negative behavior from all its members.

It goes without saying that the specific characteristics that are fundamental to children with Attention Deficiency and Hyperactivity Disorder are also prevalent in twice exceptional students with ADHD. The impulsiveness, the inability to concentrate and focus on the task at hand and other traits are likewise visible in these individuals as well. Hence, an obvious consequence of this fact is that these students effortlessly and easily acquire new and fascinating interests in their daily lives. Although they seem attracted and compelled to engage in multiple experiences at one time, most of these undertakings have a short shelf life. Quite often, as soon as a habit or activity is begun it is promptly ended to begin a new one. As a result these learners give the impression of being especially fickle in their choices of pastimes, recreational diversions and pursuits of entertainment.

Research conducted in the last two decades has shown that gifted students with ADHD often tend to inadvertently mask both their special abilities and their difficulties in learning (Antshel et al., 2007; Antshel et al., 2008; Montgomery, 2007). An indicative example of this is the twice exceptional student who is gifted with ADHD who, through the special abilities and attributes that they possess, can achieve an especially high performance but are limited academically to the point when the activities that are being attempted exhaust the mental focus and concentrative endurance that they can muster.

In the same manner, it is also possible that a student may be diagnosed with difficulties in concentration and maintaining focus when they may be endowed with exceptional intelligence and overall potential. This might not be readily apparent and even impossible to document due to their lack of ability to concentrate during the application of standardized testing (Baum, Olenchak & Owen, 1998). Charismatic students who had obtained a high score in the scale of behavioral appreciation were found to have marked difficulties in their respective scores of focus and attention maintenance. A factor such as this will obviously play a deciding role in these students' academic performance assessments (Shaw & Brown, 1991).

The recognition and the correct diagnosis of the true identity, potential and possible talent of the student can be made even more challenging when the individual accommodates a complex system of abilities and disabilities. In situations such as this, one can be led to an entire host of multiple diagnoses which, in the end, may lead to an erroneous image of the student's identity and potential abilities. This is especially important since it can often drive one to apply unsuccessful teaching strategies but, more



importantly, lead to a general confusion as to what the final overall diagnoses should be (Baum & Olenchack, 2002).

Research conducted on gifted male children with ADHD showed that they go through greater emotional tension than other gifted boys or boys with ADHD (Moon, Zentall, Grskovic, Hall & Stormont, 2001). It seems that children such as these were faced with more obstacles regarding relationships which they shared with family members and with other members from their educational environment. The most stressful hardships in the nurturing and maintenance of relationships that these students had to deal with were those that they had formed with the peers of their school.

Children with ADHD and twice exceptional children - gifted and with ADHD - were found to have a special interest in subjects that had to do with the sciences, social studies, topics that were related to space exploration, enjoyed participating in activities that required cooperation and collaboration with other individuals. These students also reported that they had the most agreeable time during free reading periods, more so than the charismatic students did. This indicates that students with ADHD can also have "high levels of coexisting creativity" according to Cramond's work (1995). The results of this study clearly show that there are obvious discrepancies between all three groups of students - students with ADHD, students who are considered gifted, and gifted students with ADHD.

A considerable segment of the scientific community support the opinion that there is a substantial deficiency of education and training in the recognition and diagnosis of the specific attributes that are associated with Attention Deficiency and Hyperactivity Disorder and giftedness. This seems to be especially true for the diagnosticians who are responsible for providing the accurate representation of the identity of these students.

It thusly becomes obvious that, under these circumstances, the prospect of positively providing a fair and unambiguous diagnosis becomes even more challenging when there is a delicate but distinct combination of a variety of characteristics that reside within the same individual. Studies made in this area have indicated that there exists a severe lack of understanding on how to go about identifying, discerning and recognizing these traits in the students. It is therefore made clear by the previous analysis that the extraction of a factual, scientific and proper diagnosis is an extremely difficult, arduous and intricate process (Webb & Kleine, 1993).

As of this writing, there has been no specific and definitive proof which can support the previous claim. A study that was conducted in 2004, however, revealed that a significant percentage of university graduates who had received diplomas in education did not possess the necessary knowledge and training to recognize the duality of symptoms which indicated the presence of giftedness and Attention Deficit and Hyperactivity Disorder in twice exceptional students (Hartnett et al., 2004).

Neurological studies that were conducted regarding charismatic students with ADHD using EEG (Electroencephalographic) equipment affirmed that twice-exceptional children displayed a greater difficulty in attention transfer and changing their focal direction during the completion of creative activities than students with ADHD (Kalbfleisch, 2000). Throughout this study it was also discovered that the overall performance of both categories of children was analogous and respective to their intelligence scores. Nonetheless, it has not yet been confirmed whether representational techniques such as the aforementioned accurately depict the symptomatic discrepancies between Attention Deficiency and Hyperactivity Disorder and the actual capabilities of the individual.

### **Responsibilities of the Classroom Teacher**

According to a recent study (Winebrenner, 2003), the classroom teacher can implement different strategies that can be used to more effectively identify and recognize the exceptional characteristics of their students, regarding both learning difficulties and giftedness. In this manner, the educators will be able to put themselves in a more advantageous position to assist each individual in the learning process. The basic principles of this practice can be summed up into four basic postulates.



- The teacher can gather information on the different capabilities that the student displays and discover the specific weaknesses that exist within them. This will allow the educators to identify the needs and strengths of the individual and assist them in formulating a rough diagnosis so as to develop a more accurate IEP (Individualized Education Plan) for them.
- The educator is burdened with the task of including teaching strategies which facilitate the learning process for the twice exceptional student. Thus, the formation of an accurate and appropriate Individualized Education Plan for the specific child must include instruction geared toward catering to both the gifted aspect of the student (one example of this is enriched teaching material and methods) and the attention deficit or hyperactivity that it may display.
- The cooperation and collaboration of professionals from different and varied fields of education, science and psychology is a necessary approach to teaching individuals with twice exceptional characteristics. Many experts can be utilized during these partnerships from all sectors surrounding the learning process.
- The teacher must verify to the best of their ability that the environment in which the learning process takes place is as conducive as possible to the edification of the student. This is, of course, also mentioned in the IDEIA act of 2004 when referring to the section on the Least Restrictive Environment (LRE). This is not to say that the LRE in each case is the school classroom. Depending on each individual student, the best and most conducive learning environment for a child may not be the typical classroom. In such situations a referral to special education institutions, afterschool clubs or art programs can be quite productive.

### **Key Issues**

When considering how best to offer educational services to twice exceptional students, it is necessary to acknowledge certain key issues that need to be addressed when attempting to formulate an appropriate and organized instruction plan. In this endeavor, provision must be made for the specific specialized education of the individual. This must be done in such a way that will satisfy the needs of gifted edification and assists the overcoming of obstacles regarding the learning difficulties that the child has. According to a study on the appropriate instructional practices that need to be implemented for twice exceptional children (Nielsen, Higgins & Hammond, 1995), there are five integral aspects that must be paid close attention to when considering what teaching strategies are to be applied for this purpose. These, in no particular order, are:

#### ***Accommodating Academic Strengths and Gifts***

(Baum & Own, 2004; Brody & Mills, 1997; Nielson & Higgins, 2005; Olenchak & Reis, 2002; Weinfeld, Barnes-Robinson, Jewler & Shevitz, 2006)

In order to teach new ideas and concepts to students, an effective educator utilizes the student's strengths and special attributes they possess to embed the newly acquired knowledge. Taking this into consideration, an efficacious teacher is not bound by the typical curriculum that is offered, but rather uses an interdisciplinary approach to the child's edification. This allows the students to relate topics and subjects that are taught and find the associations between them.

Students must also be allowed to challenge the material that is being offered and thus question the intricate details and aspects of each component of the course. This helps the students become more engaged in the learning process, which in turn causes them to direct their attention towards the lesson at hand more competently.

The educator should attempt whenever possible to address and utilize areas of life and knowledge which the students are passionate about. By combining the curriculum material with fields of interest to the child, the teacher can make the lesson much more enjoyable for them and facilitate the student in focusing their attention on the object being taught.

The teacher must attempt to find alternative methods of displaying, demonstrating or explaining the subject which is being taught. It seems that this teaching strategy is vital to the edification of twice exceptional students. Without this feature, and due to the inherent lack of attention focus and the high intelligence that



these students possess, it is significantly likely that they will find it severely difficult to concentrate during the teaching session.

It goes without saying that activities that are normally reserved for and offered to typical advanced learners, should be provided whenever available and when the possibilities allow. Practices such as administering a condensed curriculum, differentiating teaching methods, enriched learning and schemes of educational acceleration create a positive disposition in the twice exceptional learner and facilitate the acquirement of knowledge in the classroom.

### ***Accommodating for Academic Weaknesses and Disabilities***

(Baum & Own, 2004; Brody & Mills, 1997; Olenchak & Reis, 2002; Weinfeld, Barnes-Robinson)

All students, regardless of whether they belong to the category of typically developing learners, whether they are considered students with learning difficulties or whether they have been diagnosed as twice exceptional learners, must overcome their weaknesses concerning the learning process. In this respect, it is essential for every individual who takes part in the learning curriculum to find ways to conquer these weaknesses and develop individualized methods to compensate for them.

Hands-on learning seems to be one of the most effective ways that this goal can be achieved. By utilizing learning which is accomplished through the formation of new and personalized experiences the student can acquaint themselves with situations and subjects that facilitate their understanding of topics in an empirical way.

Techniques which allow for differentiated teaching can greatly assist the acquirement of knowledge through the use of processes and material which promotes the consolidation of the newly acquired instruction.

The educator can also employ techniques and teaching strategies that were unavailable in the past. By exploiting the new technological advancements that are now at the teacher's disposal, the process of learning can become a multi-stimulating experience. For this purpose an instructor can make use of means such as computers, text-readers, keyboarding and other tools to further enhance the involvement of the twice exceptional learner.

It is of a vital nature that the teacher provide direct instruction regarding study skills and meta-cognitive processes. By introducing and nourishing novel learning strategies and utilizing these to cope with and promote the schooling of gifted students with Attention Deficiency and Hyperactivity Disorder is crucial to the continuing development of the knowledge, progress and personal growth of the individual.

One of the most important aspects of an educator whose students have been diagnosed as twice exceptional is the promoting of their self confidence and self understanding. By bolstering these characteristics of their students, the child begins to become more and more autonomous in their educational endeavors and proceeds to attempt a greater number of tasks while experimenting with varying levels of difficulty. In the occasions that this is accomplished, the individual is able to progress to a much greater degree through the setting of their own goals and the belief in themselves that they are able to achieve them.

### ***Providing Direct Instruction to Support Classroom Success***

(Weinfeld, BarnesRobinson, Jeweler, & Shevitz, 2002)

Each twice exceptional student is faced with their own individual assembly of difficulties and learning disabilities which can significantly impact the way they learn and the progress they make. Direct instruction on these areas of difficulty can achieve massive success in the way of development. The representative fields in which this can be accomplished are:

- Writing
- Organization
- Reading
- Mathematical Calculations
- Test Taking Strategies



### ***Addressing Social and Emotional Issues***

(Reis & Colbert, 2004)

An integral part of the educating process is the socio-emotional development of the children that are being taught. Since the education of a student is not only limited to the cognitive aspect and the curriculum material of the classroom, the educator is burdened with the task of promoting full and all-encompassing inclusion into school society. In order to achieve this, the teacher is obligated to deal with and moderate the feelings of failure, the low self esteem, the isolation and perhaps even the anger a student who is twice exceptional may feel.

It is quite common for children with these special attributes to experience such emotions. As a result, it is readily evident that the educator is charged with creating an emotionally stable and healthy environment which promotes a sense of safety and prevents the interference of any undue negative sensitivity on the part of the student during the learning process.

The teacher should harbor an emotionally safe learning environment in which the twice exceptional student is given the opportunity to evolve and establish a healthy self concept of themselves. During the course of this development, the educator lays the foundation of self understanding. Through this self awareness, the teacher is able to facilitate the individual's recognition of their emotional vulnerability and discover methods to retain their sense of emotional balance and stability while at the same time encouraging the visualization of a positive future.

### **Addressing Behavioral Issues**

It is commonly understood that when a student exhibits negative behavioral traits that they are either trying to avoid something or that it is a cry for attention. Twice exceptional children are not exempt from this stereotype, and are also likely to lash out and display unbecoming conduct and attitude in the school for the same reasons. In order to avoid this, the educator must first and foremost attempt to uncover the root of the disorderly demeanor that the student exhibits. Only after correctly and accurately assessing the motives behind the individual's behavior and determining what function it serves for them, can the teacher then begin to attempt to deal with it. By proposing and nurturing a class climate with specific limits and clear expectations the student can begin to curtail behaviors which are undesirable.

An especially practical way of approaching this situation is to provide the student with practices and techniques that allow them to maintain their own self discipline. This can be achieved through the guidance of the instructor and the tutelage in the use of self regulatory tactics.

It is also noteworthy to add that positive reinforcement is much more effective in producing the desired results in the behavior of twice exceptional students. The teacher, whenever possible, should attempt to veer clear of the negative aspects of the individual's attitude and not focus on the adverse consequences of their demeanor. These strategies tend to pacify the student and facilitate their blossoming into a positive and well-functioning member of society.

### **Conclusion - Possible Intervention**

By analyzing and interpreting the data that is available on twice exceptional students we can draw some possible conclusions based on the results of the assessment of the information which has been gathered from the research. The necessity of diagnosis and recognition of gifted children with ADHD becomes quite obvious when one considers the detrimental effects that overlooking these special circumstances may have on the individual. This, of course, is easier said than done for the simple fact that the characteristics that are expressed through the child's behavior and work methods are difficult to discern, distinguish between them and be categorized accurately due to the nature of their duality.

Much of the previously mentioned research has mostly been focused at finding and implementing various forms of therapy and possible useful modes of intervention for students who exhibit ADHD (Multimodal Treatment Study of Children with ADHD; MTA Cooperative Group, 1999). Although the application of appropriate teaching strategies for gifted students has also been explored extensively, inquiry



and analysis on recognizing, treating and utilizing better teaching tactics for twice exceptional students is still in its infancy. What is mostly encountered in the scientific journals that were referenced are recommendations and approaches to educating these students. There has not been, however, much in the way of identifying the efficacy of these methods and how they can possibly be improved upon. Careful individualization of the educational scheme that is to be applied to the student is what these studies chiefly assert through their findings (Leroux & Levitt-Perlman, 2000; Flint, 2001).

Nonetheless, the significance of these studies must not be discounted. It is made clear that the evidence provided in this research presents the basis on which future analysis and exploration can be conducted on not only the identification of the singularities of twice exceptional students, but also the strategies and practices that can be employed to adequately and professionally teach them. It is for this purpose that the establishment of scientific teams dedicated to the detailed, systematic and appropriate evaluation and diagnosis of these individuals is crucial for their development. The formation of these teams is essential if we wish for these students to be provided with equal opportunities in the educational environment which is administered by the state.

If the identification of gifted students with Attention Deficiency and Hyperactivity Disorder is not handled with extreme care, the risk of misdiagnosis is high. This in turn can lead to the implementation of practices that can have adverse effects on the child's psychology and performance in the school system. There are many consequences that can come about from this, most especially the undermining of the individual's self esteem and their overall emotional well-being. The most common aspect of such repercussions is that the students tend to lash out, overreact, and generally display behavioral problems which can bring about even worse ramifications for the child. It therefore becomes evident that a vicious cycle of cause and effect is created which can spiral down quite quickly for the charismatic student with learning disabilities if not recognized promptly.

That there is significant difficulty in identifying and treating twice exceptional students in the classroom is a fact that is indisputable. Detecting and recognizing the specific and special characteristics that make a person both gifted and possessing special learning difficulties is a complex and arduous process which demands the utilization of the knowledge of many experts from various fields of science. This is the only way to ensure that twice exceptional children do not fall through the "cracks" of the educational system. The longer that these students go undiagnosed and unidentified, the longer they go unused and capitalized on as natural social resources of the community.

It must not be forgotten that this unique and extraordinary group of human beings deserves the optimum level of education that they can be given just as much as typically advancing students do. Bearing this in mind, it can be safely assumed that as scientists we can no longer ignore the obligation and the responsibility that we share in the finding and treating of these individuals. It consequently becomes evident that the purpose of this paper is to stir up conversation and subsequently elicit ideas on how best to achieve this goal. The data presented in this bibliographical study aims at evoking productive dialogue among members of school teaching staff and the scientific community which can then propel the volition of teachers and scientists, respectively, to embark on even more meticulous research on this subject. Finally we have to underline the role of digital technologies in education domain that is very productive and successful, facilitates and improves the assessment, the intervention and the educational procedures via Mobiles [35-44], various ICTs applications [45-78], AI & STEM [79-89], and games [90-96]. Additionally the combination of ICTs with theories and models of metacognition, mindfulness, meditation and emotional intelligence cultivation [97-137] as well as with environmental factors and nutrition [31-34], accelerates and improves more over the educational practices and results, especially the gifted students with ADHD.



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