



## THE MECHANISM OF FLOW OF KNOWLEDGE - A CASE LET FROM PERSONALIZED LEARNING AMONG STUDENTS WITH ADHD

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### ABSTRACT

Attention-deficit hyperactivity disorder (ADHD) is the most general neurobehavioral disorder of childhood. It is also among the prevalent chronic health conditions affecting school-aged children. ADHD refers to a family of related chronic neurobiological disorder that interferes with an individual's capacity to regulate activity level (hyperactivity), inhibit behaviour (impulsivity), and attend to tasks (inattention) in developmentally appropriate ways. Students with ADHD are often energetic, creative, and good problem-solvers. They need support with sensory assimilation, idea, and social communication. Learning is personalized; students receive a customized learning to experience. Students learn at their individual speed with organization and maintain in challenging areas. Learning aligns with security, requirements and skills, and takes position in an appealing environment where students gain a better understanding of their strengths. To get an idea of personalized learning is, try to picture a classroom that doesn't have a "one size fits all" approach to education. The teacher doesn't guide all students through the same lessons. Instead, the teacher guides each student on an individualized journey. What, when, where and how of learning is tailored to meet each student's strengths, skills, needs and interests. "Overall" the researcher to investigate the Mechanism of Flow of Knowledge - A Case let from Personalized Learning among Students with ADHD.

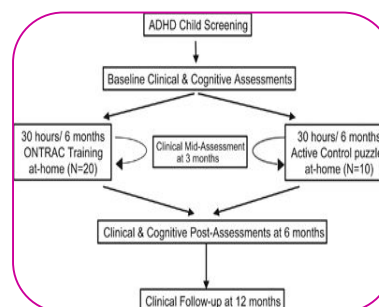
**KEYWORDS:** Attention Deficit Hyperactivity Disorder, Personalized learning, self regulated learning, Mechanism of ADHD, Executive Functions.

### INTRODUCTION:

Personalized learning focuses on the later part that is how to learn. In the fast changing world the job market and job requirement change much faster than the requisite changes in a curriculum. Specific job requirements are also varied catering to these individual needs is indeed a difficult task. So, the suggestions the researcher would like to train students, teachers, employees, and employers in the skill of personalized learning. Thus, there is a need to shift focus to identify the need, gather knowledge, perceive important components, tailor it according to individual needs, mastering it by reflecting over the utility, cost, and benefit accruing from it and designing and implementing strategies to accomplish to set target.

### REVIEW OF RELATED LITERATURE

Eleni Aretouli (2018) suggests that preschoolers with ADHD may present cognitive deficits that are related with the ADHD symptoms of inattention, hyperactivity, and impulsivity, but may also interfere, beyond and above the ADHD symptoms, with everyday functioning. Most importantly, cognitive deficits in preschoolers seem to predict future ADHD symptoms. Yet, the practice of neuropsychological assessment in this age-group has been limited. The present selective review highlights the contribution of comprehensive neuropsychological



assessments to the early identification of symptomatic preschoolers and to our understanding of the nature and developmental curve of ADHD.

Shevchenko and Glzman (2015) analysed the disorder typically occurs early in the development process, usually within the first 5 years of life. However, the peak of applications to specialists is by six or seven years of age, when excessive, poorly organized and poorly regulated activity of a child becomes an obstacle for the intensive training activities. Even with relatively high intellectual potential the children with ADHD are often unsuccessful at school and are experiencing difficulties in social adaptation to peers.

Glzman and Shevchenko (2014) examined the executive function in children with ADHD. With a complex structure of executive behaviour including sustaining activity and attention, selectivity in decision making, shifting, planning, and prognostic ability. Comparisons of ADHD in preschool and primary school children are made in an attempt to prevent the aggravation of deficits and provide early remediation.

Holger Gevensleben et al., (2012) in this studied the randomized controlled trials in children with ADHD that have been published within the last 5 years and discuss issues such as the efficacy and specificity of effects, treatment fidelity and problems inherent in placebo-controlled trials of NF. Directions for future NF research are outlined, which should further address specificity and help to determine moderators and mediators to optimize and individualize NF training. Additionally, we describe methodological (tomographic NF) and technical ('tele-NF') developments that may also contribute to further improvements in treatment outcome.

Daniel F Hermens et al., (2006) research found that the clinical use of stimulants for ADHD has been based on trial and error before an optimal therapy is reached. At the same time, scientific research on the mechanism of action of stimulants has influenced neurobiological models of ADHD, but has not always informed their prescription. While the two main stimulant types (methylphenidate and dexamphetamine) have numerous similarities, they also differ (slightly) in mechanism and possibly individual response. In this regard, the field is witnessing emergence of the personalized medicine approach to ADHD, in which treatment decisions are tailored to each individual. This new approach to research in to treatment response in individuals measures with cognition and brain function. There is a need to establish a more strong normative framework as the baseline for treatment, as well as diagnostic decisions, and as discussed, the growth of integrated neuroscience databases will be important in this regard.

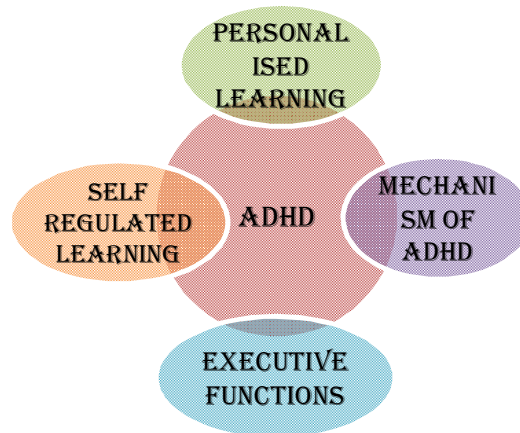
Paul et al., (1998) reviewed academic interventions for students with attention –deficit /hyperactivity disorder. The authors reviewed several empirical studies that have reported the effects of academic interventions with ADHD. Intervention approaches are reviewed in the general categories of peer tutoring, computer-assisted instruction, task and instructional modifications, and strategy training. Some of these strategies appear to enhance both academic performance and attention behaviour. Strategies that directly address the academic difficulties experienced by students with ADHD must be part of the treatment package if educational success is to be achieved.

### **PURPOSE OF THE STUDY**

Using alternative educational approaches and instructional methods-such as authentic learning, blended learning, community-based learning, or project-based learning, to name just a few-that may give students more personal choice in their education and more opportunities pursue learning experiences that reflect their interests, career aspirations, or cultural heritage. Increasingly, a variety of digital and online learning options are being used to personalize learning for students.

To facilitate the academic success of each student by first determining the learning needs, interests, aspirations of individual students, and then providing learning experiences that are customized-to a greater or lesser extent-for each student. To accomplish this goal, schools, teachers, guidance counsellors, and other educational specialists may employ a wide variety of educational methods, from intentionally cultivating strong and trusting student-adult relationships to modifying assignments and instructional strategies in the classroom to entirely redesigning the ways in which students are grouped and taught in school.

## CONCEPTUAL DIAGRAM



## ATTENTION DEFICIT HYPERACTIVITY DISORDER

ADHD is a neurological syndrome characterized by impulsivity, distractibility, and hyperactivity that is consistent with the age of the person (America Psychiatric Association, 2000). Some research shows persons with ADHD exhibit deficits in several areas such as in selective attention, executive attention, sustained attention, and orienting of attention (Tsal, Shalev & Moevorch, 2005). The condition is present in person of all ages, genders, ethnic groups, socioeconomic statuses, educational levels, and intelligence levels. Students are diagnosed with ADHD according to the criteria listed in the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition – Text Revision (DSM-IV-TR) (American Psychiatric Association, 2000). The three types of ADHD listed include (1) the predominantly inattentive type; (2) the predominantly hyperactive-impulsive type; and (3) the combined type. Males are identified three to four times more often than females, and males are identified as either the combination type or the predominantly hyperactive and impulsive type (Weygand, 2001).

Students with ADHD often symptoms that are appropriately diagnosed as other disabilities, such as learning disabilities or conduct disorders. Approximately 30 percent of all students with ADHD have a learning disability as well (Dykman & Akerman, 1991). Some students will perform poorly in academic settings, but the performance can be affected by the symptoms and does not necessarily reflect a cognitive deficit (Morrison, 1995). The DSM\_IV\_TR notes that appropriately 50 percent of clinic-referred person with ADHD also have oppositional defiant disorder, which is characterized by patterns of negativistic, hostile, and defiant behaviour toward authority figures.

## PERSONALIZED LEARNING

Individualized learning could be realized in two ways namely one through individual activity and secondly through collaborative activity. The individual activity constitutes study, individual reflection, reworking of ideas and concepts, and then constructing new knowledge on the basis of what already known. While the collaborative activity could be pursued either in a formal learning to set, where different teaching models are adopted, or an informal manner as an integral part of one's work. It represents a means of knowledge acquisition by approaching a certain topic from a variety of directions and makes it possible to choose the most suitable path for studying. In addition, it offers individual learning paths making the knowledge generation an active and continuous.

It is the concept of teachers that enthusiasm for understanding of their subject would capture the thought the students. Teaching needs to be successful and adaptive in technological world. An important aspect is the extent to which the present the future teachers are able to understand and sensitive about the information technology to integrate it into their pedagogy, whatever may be the stage level of students. The

situation was further complicated by the use of several terms interchangeably with personalized learning, most notably: adaptive learning, blended learning, competency-based learning, differentiated learning, and individualized learning. Personalized learning refers to instruction in which the pace of learning and the instructional approach are optimized for the needs of each learner. Learning objectives, instructional approaches, and instructional content (and its sequencing) may all vary based on learner needs. In addition, learning activities are made available that are meaningful and relevant to learners, driven by their interests and often self-initiated.

### EXECUTIVE FUNCTIONS

The cognitive processes in the brain that activate, integrate, and manage other brain functions are called executive functions (Pennington & Ozonoff, 1996). They underlie the child's capacity for self regulation, such as self awareness, planning, self- monitoring, and self - evaluation. Executive functions are varied and include:

*Cognitive processes*, such as working memory (holding facts in mind while manipulating information), mental computation, planning and anticipation, flexibility of thinking, and use of organizational strategies. *Language processes*, such as verbal fluency, communication, and the use of self directed speech. *Motor processes*, such as allocation of effort, following prohibitive instructions, response inhibition, and motor coordination and sequencing. *Emotional processes*, such as self-regulation of arousal level, tolerating frustration, and mature moral reasoning. For most children, these different processes work in concert, enabling them to exercise deliberate control of their attention and impulses and to maintain a problem solving behaviours in order to attain a future goal.

Executive functions, also known as higher order functions, include problem-solving abilities (i.e., reasoning, planning, and organization), flexibility in thinking, and the ability to integrate feedback from others. These abilities are primarily associated with the frontal lobe area of the brain. Tests that evaluate executive functioning attempt to determine the child's ability to manage life tasks and school assignments that involve higher order cognitive abilities. Many executive functions reflect abilities that emerge and develop rapidly in preschool children, continue to mature in older children and adolescents, and peak in young adults.

### MECHANISM OF ADHD

Individuals with ADHD do not release enough of the needed chemicals to send information from the brainstem to others parts of the brain. A deficiency in the production of the neurotransmitters dopamine and nor epinephrine results decreased stimulation and a consequent dysfunction of the neural circuits underlying attention. The brain is a complex information network made up of millions of nerve cells called neurons. Information moves through the brain nerve impulses that are transmitted from cell to cell by neurotransmitters. An impulse travels along the cell body from a sending neuron to a receiving neuron.

Individuals with ADHD have sufficiency in the neurotransmitter activity within brain stem. The psycho stimulant medications increase the production of the chemicals, leading to a decrease in the behaviour associated with ADHD, such as inattention, impulsivity, and hyperactivity. Thus medication, through its action on the neurotransmitters, improves the child's attention, motivation, motor responses, activity level, restlessness, and responsibility (Lerner et al., 1995; Powers, 2000; Rappley, 2004).

The use of psycho stimulants for ADHD is associated with rapid improvement in attentiveness, hyperactivity, impulsivity, scholastic performance, handwriting skills, family life, and socialization based on objective tests and subjective evaluations by parents, teachers, and clinicians. In addition, psycho stimulant therapy appears to help children with ADHD improve their self esteem and self image, and it enables children with ADHD to express feelings of greater control over themselves and their lives.

## SELF REGULATED LEARNING

Self-regulated learning “An active constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environment” (Pintrich & Zusho, 2007). Self-monitoring and adaptive control processes work together to produce goal-directed behaviour, deficits in either or both of these regulatory processes may result in maladaptive or suboptimal behaviour. Given heterogeneity of ADHD and the lack of a common core neuropsychological deficit among children with this disorder, regulatory models provide a plausible alternative to core-cognitive/motivational-deficit models of ADHD.

Douglas (2008) also mentions the role of error detection under the rubric of specific control processes, but the precise mechanism is not functioning. In addition to the regulative dimensions of control, there must also exist an evaluative component that monitors information processing, making an assessment of current demands and actual performance. Thus, ADHD may involve deficits in self-monitoring and adaptive control, both of which are necessary for effective self-regulation but have proven difficult to study.

Investigations highlighting the development and use of self regulation are traditionally grounded in social cognitive learning theory focus on the “Social influences on children’s development of self regulation” like teacher modelling, student goal setting, or self monitoring (Zimmermann, 2002).

Self regulated learning theories are new wave learning theories. Beyond the final decade, much research activity in educational psychology has focused on developing theories of self regulated learning (SRL) and metacognition. These theories work on the central premise that effective learners are active agents who construct knowledge by setting goals, analysing tasks, planning strategies and self monitoring understanding. In this era of cyber learning, or e- learning or online learning the application of, and research in self regulated learning gains special significance.

## CONCLUSION

For ADHD students to learn effectively, their special needs training sessions must be stimulating. This is important in retaining their attention for sufficient periods so they can grasp concepts clearly. Teach them in small bursts using a variety of visual techniques. Don’t forget to show again the content of the lesson, as this will reinforce the child’s understanding in a better way.

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