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An Evaluation of Programme for Enhancing Academic and Behavioural Learning Skills (PEABLS) for Enhancing Behavioral and Cognitive Skills among Students with Learning Difficulty

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The present study aimed to develop behavioral and cognitive aspects of self-regulation and resilience in students with learning difficulty using the Program for Enhancing Academic and Behavioural Learning Skills (PEABLS). This study is a quasi-experimental pre-test post-test research design that included fifty-four school-going children, in the age range of 6-12 years, identified with learning difficulty and behavioral issues for the past two years. Each student participated in the PEABLS intervention (both group and individual) for two months (15 sessions). The PEABLS focused on enhancing self-regulation, resilience, and academic performance by strengthening their executive functions, coping skills, and goal-directed behavior. Results suggest significant positive changes in psychosocial and cognitive domains among students in the experimental group. The post-intervention assessment showed improvements in Visual and Auditory-Perceptual Components, Cognitive and Behavioral Components. Self-Regulation and Resilience Domains proved to be significant predictors in academic performance. The study also suggests that the PEABLS program can render strong social support to students with learning difficulty.

Keywords: Learning difficulty, PEABLS, Low academic performance, cognitive and behavioral skills, Self-regulation, Resilience

Learning difficulty is seen as difficulties in learning one or more of the basic academic skills and identified through academic grades below the anticipated scores for students of the same age, class, and school environment. Studies suggest thatlow socioeconomic and cultural status harmsthe academic performance of children. Such unfavourablecircumstances negatively impact their cognitive and academic performance leading to cumulative failures causinga higher risk of developing learning difficulty (Fonseca, 2008; Fletcher, 2009).

Personal, emotional, and socio-contextual factors are strong determinants of students' academic performance. Students engage best in learning when they have a choice and can control their context. Students' engagement in their learning context helps them gain self-regulation over their thinking and learning processes (McCombs & Miller, 2008; Jukes, McCain, & Crockett, 2011). Training self-regulatory strategies involve goal-setting, self-instruction, self-monitoring, and self-reinforcement. Such training helps students build upon their metacognitive and task-specific processes to find solutions to problems. Academic achievement and better socio-emotional skills act as a protective factor, a useful component for enhancing students' resilience(Elbaum& Vaughn, 2001).Improving self-regulation and resilience skills in students having difficulty learning empowers them to become emotionally competent, self-motivated to plan strategically towards smart goals.

Program for Enhancing Academic and Behavioural Learning Skills (PEABLS)is an indigenized intervention plan inclusive of activities/ tasks closely related to students, which helps teach cognitive skills. It was planned to understand and provide a practical solution to students with difficulty in learning. This accessible school-based intervention served to

enhance their self-regulation skills, resiliency, and academic remediation.

The PEABLS

This program is a holistic one, focused onenhancing the following components:

(i) Self-Regulation: It is a constituent of executive functioning that strengthens self-monitoring, regulates emotions and impulsivity, and encourages goal-directed behavior. In this process,the student learns to identify their negative beliefs and negative experiences. The metacognitive skills enable them to do better planning and multitasking. By fostering self-regulation in students with learning difficulties, they can acquire a positive attitude towards learning developed through feedback within teaching-learning relationships that influenced their ability to learn (Mather, Goldstein &Eklund, 2015).

(ii) Resilience Building: It focused on inculcation of optimism, realistic thinking, enhancing self-esteem, coping skills, and goal setting. The program focused on teaching how to resolve interpersonal conflicts, make assertive communication and dealeffectively with conditions of aggressive spells, passivity and make effective decisions in daily states. This component's development referred to LeDoux's hierarchical model (LeDoux, 2000), promoting effective decision-making in different everyday situations.Resilience building helped studentsenhance emotional reactions by focusing on the interaction's affective and behavioral components to manage behaviors such as aggression, impulsivity, and social withdrawal.

(iii) Academic Remediation: This involved the Individualized Education Programme, which was conducted after school hours at a university lab situated near their residence to cater to the conceptual deficits and cope with the school curriculum. It is comprised of identifying the baseline performance of students and design teaching according to their specific needs. It included classroom teaching, home assignments, and art-based activities.

The Structure:

The PEABLS was carried out for 15 sessions, 60-minute lessons twice a week. The PEABLS consists of three components- (i) self-regulation therapy, (ii) resilience-building training, and (iii) academic remediation. The sessions started with the Yogic practice of Surya Namaskaar and ended with 10 minutes of Om Chanting meditation. The first two components of the program were conducted at school premises during school hours. With the help of several theme-based role-play, animated short films, plays recitation of moral stories, behavioral rehearsals, behavioral contingencies, and coping self-statements. The third component of academic remediation involved the Individualized Education Programme, scheduled after school hours to cater to their conceptual deficits and cope with the school curriculum.Table 1 depicts the detailed PEABLS session plan layout.

Individual Education Programme (IEP) is a cornerstone of academic remediation strategy for students. IEP helped to foster academic skills and cope with the related scholarly deficits. Each student's current academic performance and abilities in the concerned area were assessed. After baseline assessment, each child's goal achievement was specified, including educational and other relevant functioning skills. After attending the program, students' advancements were evaluated to get a clear idea about the student's objective and goal achievement.

Method

Sample

The present study is following a pre-test post-test research design. After taking permission from the authorities,the Principal of the school was approached to facilitate the process. Student's progress report of last two years, teacher's feedback, and parent's account were considered to identify students with a learning difficulty. Studentswhose ages ranged from 6-12 years (3rd to 7th grade), have average IQ scores, fail in class for two consecutive years, have low classroom participation and co-curricular activity, and have behavioral issueswere included in the study. In contrast,

Table 1: Session Plan Layout

No. of Sessions	Module Title	Detailed Description of Module Activities
Session 1	Thoughts and Feelings Check	The students are encouraged to discuss their thoughts and come out with their recent activating events and what they "said to themselves."
Session 2	Thinking Style	Short stories of Panchatantra were recited with themes related to optimism, hopefulness, grit, and gratitude. They also enacted those characters.
Session 3	Challenging Beliefs	Students performed role play of ByomkeshBakshi, a famous Indian detective, and reached the actual cause of the situation/problem to develop self-control and reduce emotions escalating.
Session 4	Mindfulness-Based Self-Regulation Training	Studentslearned to evaluate and categorize their thoughts related to a problematic situation and putting them in perspective. Using difficult real-life conditions, they learned to step back from emotionally charged states and appraise themselves to control their intense emotions and behaviors.
Session 5	Self-Reflection	During this metacognitive learning session, students learned to identify their specific behavior that needs change through self-monitoring and develop self-control by reducing escalation of emotion and later self-rewarding on the attainment of goals.
Session 6	Encouraging Neurologically Based Executive Functioning Skills	This session focused on promoting response-inhibition, strategicplanning, and working memory. The specific skills to attain these tasks include planning, organization, time management, self-control, task initiation, metacognitive skills, flexibility, and attention. Activities such as board games, musical chairs, my leader say games, and freeze dance was demonstrated.
Session 7	Organization Skills	Students were involved in the group tasks such as; wordplay, puzzles/ mazes for directions, color moves, treasure hunt, drawing.
Session 8	Outdoor Physical Activities	Students were taken to the open green ground with direct interaction with themselves, others, and the environment under the mentioned rule conditions. They played outdoor games that helped them to learn team ethics and act strategically.
Session 9	EnhancingWorking Memory	Students were involved in brainstorming activities, which required mental flexibility to work on the knowledge in an active and quickly retrievable state. It involved games such as chess,sudoku, and crossword.
Session 10	Enhancing Assertiveness and Negotiation Skills	This session taught to stand up for their own and other people's right. Students did role play for situations like aggressive (bullying), passive (pushover), assertive (straight forward speaking). Details explanation of Acronym of DEAL was explained: Describe the problem, Explain how you feel, Ask for change, List of improvement the change would make.
Session 11	Coping Strategies	The importance of coping mechanisms was explained using decreased emotional intensity, goal setting, practice meditation. Peer tutoring was encouraged.
Session 12	Social Skill Training and Graded Tasks	Students learned about breaking tasks into smaller units and make them manageable to reduce procrastination. The importance of self-care was explained.

Session 13	Enhancing Emotional Intelligence	Students were encouraged to make compassionate decisions for themselves and others. Pictures of different emotions via facial expression were shown to understand different emotions. They were also asked to verbally complete an incomplete sentence with five ideas on "I can be kind to others by_____."
Session 14	Problem Solving Skills	Students Learned to solve a problem with a famous story like- 'The Thirsty Crow.'Storytelling sessions enabled to reduce impulsivity or passivity. Take away lessons: (i) Stop and think about the problem, (ii) Identify goals, (iii) Brainstorming, (iv) Decision making based on outcomes, (v) Enacting the solution.
Session 15	Practice Problem-Solving Skills with Personal Situations	Students came up with their problematic situation and followed learnings from session 14 to solve their problems themselves.

students with any physical disability, intellectual subnormality, sensory impairments, or any other developmental disorder were excluded from the study. The enlisted students' parents were briefed about the research, and consent was taken to participate in the study. Fifty-four students were selected to participate in the experimental group. None of them withdrew from the study after the intervention started. The intervention was provided in two locations, i.e., school premises and Psychophysiology Lab, Department of Applied Psychology, University of Delhi.

Procedure:

The participants were screened using the Diagnostic Tool for Learning Disability (DTLD) (Swarup and Mehta, 1993) to rule out the possibility of learning disability. Later, their IQ was estimated using Raven's Colored Progressive Matrices (RCPM) (Raven, 1998). Students who scored ≥ 40 on DTLD and ≥ 50 percentile on RCPM were then subjected to Bender Gestalt Test (BGT) to evaluatefor neurological dysfunction (if any) (Koppitz, 1964). Digit Span Test (forward and backward), a subtest of Malin's Intelligence Test for Indian Children (Malin, 1977),was administered to assess working memory status and Problem Behavior Checklist (Veeraraghwan and Durga, 2005) filled by student's respective parent to screen theirbehavioral and emotional problems. Body Mass Index (BMI) was also calculated.

Table 2: Visual and Auditory Perceptual Components as Predictors of Academic Performance in Students with Learning Difficulty

Predictor Variables	B	Std. Error	β coeff.	t-value
Eye Hand Coordination	5.286	3.056	.872	2.73*
Figure Ground Perception	3.265	3.067	.514	1.065
Figure Constancy	3.643	3.278	.310	1.111
Position in Space	5.175	3.055	.905	2.69*
Spatial Relation	4.560	3.037	.899	1.501
Auditory Perception	5.175	3.055	.905	2.69*
Cognitive Abilities	5.366	3.081	.922	2.74*
Memory	3.849	3.021	.702	1.274
Receptive Language	5.190	3.181	.572	1.631
Expressive Language	6.049	2.935	1.057	2.06*
DTLD T	-5.028	2.903	-4.159	2.73*

Note: (DTLD T) Total score on Diagnostic tool for learning disability. * p value ≤ 0.05 level, ** p value ≤ 0.01 level

Students were also subjected to self-regulation scale (Hrbáčková&Vávrová, 2014)and resiliency scale for children and adolescents (Prince-Embury, 2010). The experimental group participants went through three phases, viz. baseline assessment, intervention, and post-assessment.

Results

Multiple linear regression analysis was applied toparticipants' cognitive and behavioral data after attending the intervention for two months. It predicted Academic performance (DV) based on DTLD domains (visual and auditory perception) (Table 2), cognitive and behavioral components (Table 3), self-regulation, and resilience subscales (Table 4).

A significant regression equation was found (R=0.659, F (11, 38) = 2.69, p < 0.012), with an R2 of 43.5 (43.5%). Subjects anticipated Academic performance is equal to 58.85 -5.02 (DTLD T) + 6.04 (expressive language) + 5.36 (cognitive abilities) + 5.17 (auditory perception), 5.17 (position in space), and 5.28 (eye hand coordination) (Figure 2). Academic performance (in %) for each participant increased significantly for each predictor unit. EHC, PS, AP, CA, EL and total score on DTLD were significant predictors of academic performance of students with learning difficulty (Table 2).

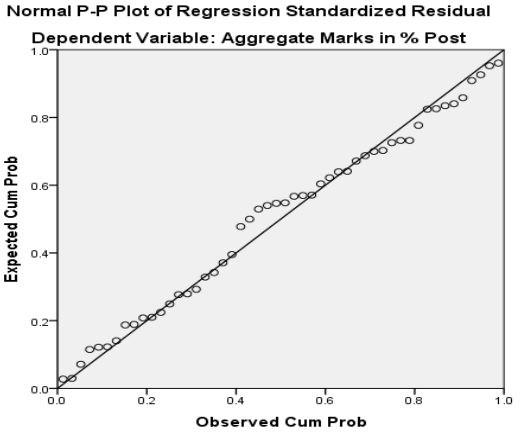

Figure 1. Normal Probability Plot of Regression Standardized Residual of Visual and Auditory Perceptual Components (DTLD) (IV) and Academic Performance (Aggregate marks in %) (DV)

Observing post intervention impact of cognitive and behavioral variables (IVs) such as Body mass index, Digit span forward (for working memory), Bender gestalt test scores (for visual- motor functioning and visual perceptual skills), scores on Problem behaviour checklist on academic performance. The results indicated that Academic performance (R = 0.43, F (6,43) =4.71, p < 0.01) explained 44% of variance in predicting well-being (Figure 2). Academic performance was significantly predicted 52.03 + by BMI scores (b = 0.84, t (5.9), p < 0.05) + Digit span Forward (b =0.44, t= 2.58), p <0.05) + BGT scores (b =-1.01, t=2.74), p < 0.01) + PBCL scores (b =-0.21, t=2.86, p <0.01) (Table 3).

Table 3: Cognitive and Behavioral Components as Predictors of Academic Performance in students with Learning Difficulty

Predictor Variables	B	Std. Error	β coeff	t-value
Body Mass Index	.846	.472	.251	2.59* (6)
IQ	.074	.135	.078	.54 (1)
Digit span (F)	.443	.211	.332	2.58* (2)
Digit span (B)	-.082	.349	-.037	.23 (2)
BGT	-1.015	.370	-.368	2.74** (1)
PBCL	-.218	.077	-.377	2.86** (1)

Note: IQ= Intelligence quotient assessed on RCPM, Digit span (F, B) = Digit span forward and backward assessed from subtest of MISIC, BGT= Bender Gestalt test, PBCL= Problem behavior checklist

* p-value ≤ 0.05 level, ** p-value ≤ 0.01 level

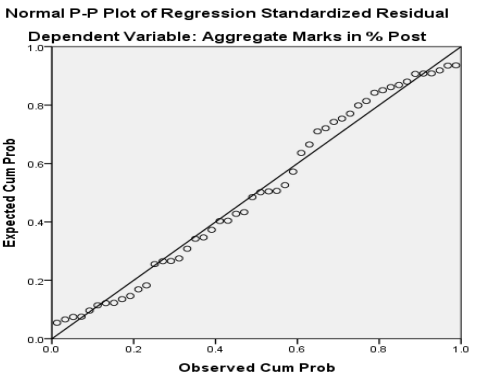

Figure 2. Normal Probability Plot of Regression Standardized Residual of Cognitive and Behavioral Components (IV) and Academic Performance (Aggregate marks in %) (DV)

Table 4: Self-Regulation and Resilience Domains as Predictors of Academic Performance in students with Learning Difficulty

Predictor Variables	B	Std. Error	β coeff	t-value (df=11)
SR Affect	-1.393	.747	-.413	2.32* (4)
SR Awareness	-.386	.883	-.096	.43 (4)
SR Empowerment	-1.362	.828	-.401	1.64 (4)
SR Total	1.205	.608	.764	2.21* (4)
RES Sense of Mastery	.462	.193	.514	2.89** (5)
RES Sense of Relatedness	-.069	.264	-.066	.26 (5)
RES Resource Index	-.527	.302	-.586	2.41* (5)
RES Emotional Reactivity	-.272	.222	-.265	1.26 (5)
RES Vulnerability Index	.406	.203	.432	2.31* (5)

Note: SR= Self-regulation RES= Resilience

* p-value ≤ 0.05 level, ** p-value ≤ 0.01 level

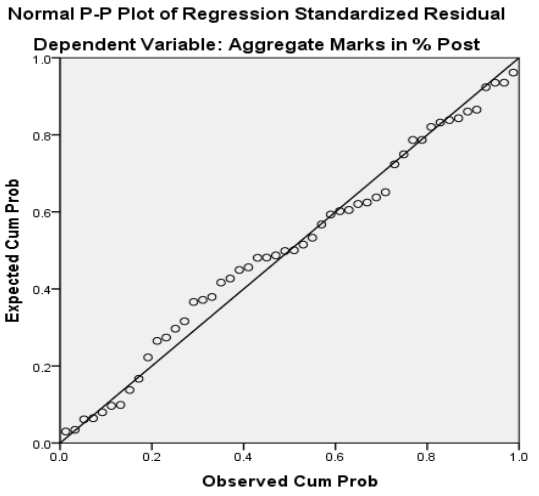

Figure 3. Normal Probability Plot of Regression Standardized Residual of Self-regulation and Resilience domains (IV) and Academic Performance (Aggregate marks in %) (DV)

Independent variables such as Self- regulation domains- Affect, Awareness, Empowerment and Resilience subscales mastery, relatedness, Resilience resource index, affective reactivity on and Resilience vulnerability index depicted significant regression equation with academic performance of students. A significant regression equation was found (Γ=0.44, F (9, 40) = 3.74, p<0.01), with R2 -20 (20%). Subjects anticipated Academic performance is equal to 48.87 + b= 0.40, t= 2.31, p <0.01 (Resilience vulnerability index) - b= -0.52, t= 2.41, p <0.05 (Resilience resource index) + b= 5.36, t= 2.89, p<0.01 (Resilience sense of mastery) + b= 1.2, t= 2.21, p<0.05 (Self- regulation total score), - b= -1.39, t= 2.32, p <0.05 (Self- regulation –Affect domain) (Figure 3. Academic performance (in %) for each participant increased significantly for each predictor unit. Self- regulation (Affect), Self-regulation (Total), Resilience Sense of Mastery, Resilience resource Index were significant predictors of academic performance of students with learning difficulty (Table 4).

Discussion

The present study developed a school-based intervention plan for students with difficulty in learning. It helped them overcome their cognitive paucity by involving them in activities/tasks within therapeutic sessions. The study also examined the significant predictors of their academic performance after attending PEABLS. Multiple linear regression analysis was calculated to identify psychosocial and cognitive-behavioral factors affecting students' academic performance after going through an intervention process. A significant regression equation was found that visual and auditory components (DTLD domains) predicted students' academic performance with learning difficulty. A high level of eye-hand coordination, auditory perception, cognitive functions, and expressive linguistics were significant predictors of better academic performance in students with learning difficulties. Similar to our findings, several studies indicated thatcognitive-behavioral interventions and individualized educational plans are better for children who experience learning problems (Winter&O'Raw, 2010; Rix et al., 2013). Care and support encourage children with learning problems to overcome adversities,

increase autonomy, and increase self-regulatory strategies (Downer et al., 2010).

Not only domains of DTLD but other cognitive and behavioral components also significantly improved after students participated in PEABLS activities. The study results were suggestive of high B.M.I. and Working memory (Digit span Forward), while low BGT scores and PBCL scores predicted better academic scores.

Similarly, Bindu (1998) studied the relationship of learning difficulties to constitutional factors of visual perceptual development, expressive language development, visual and verbal sequential memory, auditory discrimination, and fine motor development. Theirfindings were suggestive oflow expressive language development to be a primary factor leading to learning difficulty. In anexperimental study, it was revealed that low B.M.I. adversely affects children's perception and cognition (Kaul, Singh & Malhotra, 1985; Verma et al., 1980).

Findings from the present study also depicted psychosocial variables such as self-regulation (affect domain) and resilience (sense of mastery and resource index). Subscales are significant predictors of students' academic performance with learning difficulty. Empathetic communication from adults (from parents and teachers) becomes a useful tool to integrate self-regulation amongschool children(Housman, 2017). Studies have correlated young children's emotional regulation with better scholastic performance (Leerkes et al. 2008), and self-regulation is positively connected with children's emotional intelligence (Diamond 2012). It is also a pre-requisite for effective learning and building a better socio-emotional relationship (Murray et al. 2016). Studies revealed a positive association of self-regulated learning with better scholastic performance (Ho, 2004). Guided interventions help children maximally utilize self-regulated learning strategies for academic learning (Hong et al., 2009). Therefore, it is recommended that self-awareness and self-control are essential preconditions to overcome distractions caused due to social and environmental unfavorable conditions, and thus, its nurturance becomes inevitable (Nalavany, Carawan, &Rennick, 2011).

Limitation:

Despite the best effort made to control the variables under study, the present study has some limitations. The student participants were taken only from two schools, which restricts the scope of its generalization. Further, the students mostly belonged to urban slums. The PEABLS did bring considerable enhancement in self-regulated behavior, promoting resiliency and improving their academic skills.

Conclusion

The students with learning difficulty display various forms of challenging behavior. Due to repeated academic failure, they become less motivated, have poor self-esteem, and lower self-concept. Learning strategy instruction is a tremendous positive in building educational potential for students with learning problems to empowers them to retain the use of strategies in promoting effective performance in academic and social activities. PEABLS is an intervention program that positively impacts students' psychosocial, cognitive, and psychophysiological aspects with difficulties in learning. The study aimed to improve students' efficiency through intervention to strengthen their self-regulation learning strategies and resiliency skills to enhance academic performance. This study anticipates educators and other resource persons with pragmatic solutions for integrating instruction to develop self-regulatory and resiliency skills in their curricula. This study will shed light on unattended students' areas and helpbuild insight to manage students' learning problems creatively.

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