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Self-Regulation Learning Strategies and Academic Performance in Students with Learning Difficulty

Pratima Kaushik[1] (PhD), S.P.K. Jena[1] (PhD)

1. Department of Psychology, University of Delhi, India

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Corresponding Author:
Pratima Kaushik
Department of Psychology,
University of Delhi,
India
E-mail: pratima.kaushik08@gmail.com

Abstract

Introduction: Difficulty in learning among younger students has perhaps become the greatest challenge for the present schooling framework. As they do not meet all requirements for criteria of formative incapacity, they are regularly neglected. Upgrading self-regulation aptitudes in students with learning difficulties enables the capacity to comprehend and control their learning cycle.
Method: The current investigation was a semi-experimental research with a pre-test, post-test control group design. The study was comprised of 100 school students from New Delhi, India, whose ages ranged between 6-12 years studying in 3rd-8th grade, showing low scholarly accomplishment for ceaseless two years alongside behavioral issues. Students in the experimental group participated in the Program for Enhancing Academic and Behavioral Learning Skills (PEABLS), a cognitive-behavioral intervention, while the control group attended psychoeducation sessions. Both groups were compared using t-test and ANOVA. The relationship between academic, cognitive, and behavioral measures was assessed using Pearson's correlation coefficient.
Results: Findings indicated that PEABLS significantly impacted cognitive skills and self-regulation, consequently improving academic performance among the experimental group ($p < 0.01$).
Conclusion: The study concluded that attending PEABLS sessions enhanced the level of self-regulation, academic performance, and cognitive skills among school students with learning problems.

Keywords: Self-regulation, Program for Enhancing Academic and Behavioral Learning Skills (PEABLS), Cognitive Training, Academic Performance, Learning Difficulty

Introduction

India has continuously experienced changes in academic scenarios over the years to bring better allocation of educational resources. One among them is the "Right to Education," which provides opportunities for every child to achieve his/her academic potential. However, many school children still underperform [1] and are often labeled as "scholastically backward" [2-4]. Early socio-emotional developments are its substantial determinants [5]. Such labels bring down their confidence and put enormous pressure on guardians and educators. Although the issue of learning problems in school children is frequent, public insights on such young children's academic, cognitive, or psychosocial development are scant in most developing nations. Such gaps add on to the lower improvements in their academic and psychosocial skills [6]. Unfavorable childhood encounters additionally radiate to antagonistic mental and physical health across life expectancy. Such adverse conditions create cognitive, physical, and mental harm in youngsters, [7] related to helpless difficulty in learning, mental sicknesses, and maladjustment [8].

Factors such as lack of opportunity to learn cognitive skills, sensory deprivation, substantial hardship, demotivation, language deprivation, alcoholic parent/s, and unfriendly

environmental conditions cause distress. It makes them mentally de-roused and become disinterested in showing any outward interest in the learning exercises directed in the school. It contrarily impacts their psychological turn of events and scholarly execution, leading to higher helplessness in academic performance [10]. They need a little push from educators to understand their potential [11]. There is a considerable demand to train educators to manage students with learning difficulties [12]. These restrictions can be overwhelmed by furnishing effective intercession programs to deal with causes, consequences, and the management of learning difficulty at all ages and grades in each school. Early evaluation and mediation have indicated positive outcomes in overseeing such a crisis.

Researchers have found cognitivism as the current psychological process of learning, where the student is supposed to have an obligation regarding his/her learning process. They effectively engage with learning measures by improving and reproducing their current information to new information through self-directed learning measures [13]. It is significant for students, guardians, and educators to comprehend the significance of self-regulation in improving their academic accomplishment capacities. Self-regulated learning skills enhance autonomy among students who direct their endeavors to learn self-monitoring, time management, and physical and social-environmental regulation processes [14]. Educators or resource persons (school counselors) can execute such practices for viable learning become mindful of substitute methods of moving towards learning circumstances [15].

Research evidence suggests that high academic achievers utilize better self-directed learning procedures compared to students with low curricular accomplishment. Self-reflection helps in accomplishing a better cognitive process. They can figure out how to control their learning practices to improve their academic learning and execution. Self-monitoring alludes to "the tweaking and nonstop change in psychological exercises of students" [16]. The students engaged with the self-regulated learning process can turn out to be better. They become more mindful of their learning process. Self-regulation skills enhance better executive functioning among students. It comprises skills including the capacity to control one's feelings, good relations, dodging wrong or forceful activities and ordering objective coordinated conduct, centered consideration, intellectual adaptability, and sharp working memory [17-18]. Several studies have prompted the advancement of assorted types of mediations to develop self-regulated skill training in school students by including educational plan-based projects, social and individual abilities improvement procedures, and practicing projects, for example, mindfulness and yoga [19-21].

The current study aimed to develop and evaluate the efficacy of a cognitive-behavioral intervention (PEABLS), which is intended to address younger students' particular necessities with learning difficulties. It helps them to improve their self-regulated learning process, academic performance, conduct related issues, and enhance emotional regulation by accessing an available school-based intervention. The intercession was given for two months to students to learn and rehearse cognitive and behavioral aptitudes intended to reinforce their self-regulated adapting subsequently and address explicit objectives to improve academic performance.

Method

This study was a quasi-experimental research with a pre-test post-test design. It comprised of experimental and control groups, which were assessed twice, i.e., before and after implementing the intervention. The study aimed to evaluate the efficacy of a cognitive-behavioral intervention (PEABLS), designed for students with learning difficulties. The study's goal was to improve their academic performance by training them with self-regulation and cognitive-behavioral skills. Students with a learning difficulty in the experimental group received intervention for two months (16 sessions lasting for 2 hours, twice a week). The experimental group received PEABLS intervention, while the control group only received psychoeducation.

The population included 100 school students from a government owned school in Delhi, showing low scholastic accomplishment for continuously two years alongside behavioral issues, chosen dependent on their teacher's report. Their age ranged between 6- 12 years, studying in 3rd to 8th grades. The reason for selecting this population was evidence related to problems that predict future school drop-outs, conduct-related problems, substance abuse problems, and need for services [22]. The researcher approached the elementary school Principal after getting a consent from the Directorate of Education (SDMC), New Delhi, India. After explaining the research purpose to the respective class teachers, a list of students with learning issues was obtained. In the annual parent-teacher meeting, the guardians of selected students were oriented about the intervention study. Guardians gave their written consent for their ward's participation in the research.

Students were screened for learning disability with Diagnostic Test of Learning Disability (DTLD) [23], and their intelligence level was estimated utilizing Raven's Colored Progressive Matrices (RCPM) [24]. Students who scored ≥ 40 on DTLD and ≥ 50 percentile on RCPM were further assessed on Self-Regulation Test [25] to measure the level of self-regulation of children and minors in three areas: Affect, Awareness and Empowerment. The teachers gave their student's aggregate percentage scores on their first term exams as their academic performance. None of the students withdrew after the intervention began. One hundred students were randomly assigned into two groups, i.e., 50 students in the experimental group who got PEABLS sessions and 50 students in the control group who received psychoeducation sessions. Both groups were balanced on sex, socio-economic status, and grade level. Students were subjected to post-assessment after their pre-assessment and intervention were complete. The Students' aggregate percentage scores in their mid-term

exam were considered as their post-intervention academic performance. During post-assessment, students were again tested on DTLD and self-regulation test. Table 1 depicts the demographic distribution of the participants.

The PEABLS is a cognitive-behavioral approach based on an intervention plan developed to improve directed learning aptitudes in students with learning difficulties. Self-regulated therapy components focused on student's emotional regulation, impulse regulation and control, managing stress load, executive function strengthening, self-monitoring, purposeful altering behavior, goal-directed behavior, decision making, self-awareness, internal motivation, empathy, and social skills. Academic remediation was also a part of the intervention plan. The PEABLS sessions helped students distinguish their negative convictions and create psychological adaptability when confronted with negative contemplations. Students became skilled in determining relational clashes, assertive communication, and managing impulsivity and aggression in difficult everyday circumstances. The second portion of the program comprises individualized educational remediation to assist them with adapting to curriculum-related shortfalls. The meetings began with the Yogic act of Surya Namaskaar. They ended with 10 minutes of Om Reciting meditation to teach a positive climate and help students improve their degrees of fixation, consideration, and bring mental and physiological unwinding. Self-regulation therapy was led at school premises during school hours through a progression of role plays, kid's shows, games, recitation of moral stories, behavioral rehearsals, and coping self-statements. The academic remediation included an Individualized Educational Program (IEP). After school hours, students attended the department's psychophysiology lab for IEP to deal with curricular deficiencies and adapt to the class educational program. It involved recognizing the pattern execution of students and configuring instructions, as indicated by their particular necessities.

The PEABLS helps in progressively enhancing self-regulation skills and helps students apply those aptitudes to meet set up objectives of improving their academic exhibition. Therefore, students require an adult's guidance and support in picking versatile practices. Zimmerman and Martinez-Pons [26], in their intervention causative model, recommended that with the improvement of self-regulated abilities, students become mindful in dealing with daily life conditions [27]. Enabling executive functioning among students gives promising outcomes in academic, social, and individual life where they regularly require critical thinking and dynamic aptitudes [28]. Scholastic execution relies on an assortment of skills and capacities, such as arranging, coordinating, organizing data, adapting to speculation, retaining essential data, and screening their advancement.

Table 1. Demographic Details of Subjects in Experimental and Control Group

Variables	Control group (N=50)	Experimental group (N=50)
Age	Mean (SD)	Mean (SD)
	10.02 (1.13)	10.38 (1.39)
Gender	Male (36%), Females (64%)	Male (50%), Females (50%)
No. of Family Members	6.06 (1.57)	5.58 (.97)
Family Income (per month)	₹.18720/- (25.15)	₹18420/- (24.83)
Grade	4.56 (1.09)	4.78 (1.32)
Aggregate academic score in % (Pre intervention)	37.88 (5.4)	37.9 (7.0)
Aggregate academic Score in % (Post Intervention)	39.32 (4.8)	47.78 (6.8)
Body Mass Index	12.96 (2.03)	13.88 (2.01)
RCPM (IQ percentile score)	109 (8.01)	113.9 (7.23)

Results

Table 2 portrays the comparative estimations of pre and post-intervention scores, where experimental group participants performed significantly better. There was a significant distinction in the mean scores of Aggregate Academic scores (in %) and DTLD scores. Self-regulation and its three domains, viz. affect, awareness, and empowerment were significantly higher than pre-intervention mean scores. Findings recommend that PEABLS sessions positively impact cognitive skills, learning abilities, self-regulation, and academic performance in experimental group participants.

Students' post-intervention performance on cognitive measures, self-regulation, and academic scores in experimental and control groups was compared. F-ratio of mean scores (Table 3) were significant at the 0.01 level. The result signifies that the experimental group students who attended PEABLS sessions had substantial improvement in cognitive skills, academic scores, and self-regulation compared to control group participants who only attended in the psychoeducation sessions.

The intercorrelation matrix of academic aggregate scores, self-regulation scores, and scores on DTLD demonstrated a significant positive association between academic aggregate scores (in %) and self-regulation's affect along with the empowerment domains (r= 0.27, 0.28 and 0.3 and overall score on self-regulation respectively at 0.05 level of significance). Student's academic aggregate score was significantly related to DTLD scores (r= 0.27 at 0.05 level). The DTLD scores were also significantly associated with self-regulation's domain such as affect and empowerment scores (r= 0.36, 0.33, and 0.31 on, and overall self-regulation scores, respectively) (Table 4). Findings in this table suggest that better self-regulation skills promote better academic execution and cognitive aptitudes.

Table 2. Comparison of academic scores, DTLD scores, self- regulation scores before and after the intervention.

Variables (N=50)	Mean	SD	SeM	Correlation	Df	t- Value	Sig. (2-tailed)
Agg Aca Marks Pre	37.9	7.0	.99	.89	49	22.43	0.01
Agg Aca Marks Post	47.78	6.81	.96				
DTLD Pre	58.24	4.90	.70	.83	49	39.05	0.01
DTLD Post	75.51	5.63	.80				
SR Pre	31.64	4.44	.62	.15	49	11.66	0.01
SR Post	42.68	5.73	.81				
SR Aff Pre	9.34	2.076	.294	-.13	49	7.5	0.01
SR Aff post	13.54	3.118	.441				
SR Awar Pre	11.44	1.752	.248	.036	49	6.6	0.01
SR Awar Post	14.16	2.394	.338				
SR Emp pre	11.10	2.063	.292	.265	49	11.08	0.01
SR Emp post	15.16	2.207	.312				

Note: Agg Aca Marks Pre (Aggregate academic marks in % Pre-intervention scores), Agg Aca Marks Post (Aggregate academic marks in % post-intervention scores), DTLT Pre (Pre-intervention score on Diagnostic tool for learning disability), DTLT Post (Post-intervention score on Diagnostic tool for learning disability), SR Pre (Pre-intervention total score on Self-regulation scale), SR Post (Post-intervention total score on Self-regulation scale), SR Aff Pre (Pre-intervention score on Affect domain of Self- regulation), SR Aff Post (Post-intervention score on Affect domain of Self- regulation), SR Awar Pre (Pre-intervention score on Awareness domain of Self- regulation) SR Awar Post (Post-intervention score on Awareness domain of Self- regulation). SR Emp Pre (Pre-intervention score on Empowerment domain of Self- regulation), SR Emp Post (Post-intervention score on Empowerment domain of Self- regulation).

Table 3. Comparison of aggregate academic scores, self- regulation scores, and DTLD of experimental and control groups.

Source (N=100)		Sum of Squares	df	Mean Square	F	Sig.
Aggregate Academic Marks in %	Between Groups	1391.29	1	1391.29	39.52	0.001
	Within Groups	3449.46	98	35.19		
	Total	4840.75	99			
Self-regulation	Between Groups	2777.29	1	2777.29	100.99	0.001
	Within Groups	2694.90	98	27.5		
	Total	5472.19	99			
DTLD	Between Groups	7473.60	1	7473.60	204.03	0.001
	Within Groups	3589.83	98	36.63		
	Total	11063.43	99			

Note: DTLD (Scores on Diagnostic Tool for Learning Disability)

Table 4. Intercorrelation matrix of aggregate academic score (%), domain wise self- regulation scores and scores on diagnostic tool for learning disability.

Variables (N=50)	M	SD	1	2	3	4	5	6
Agg Aca Marks in % (1)	47.78	6.8	-	-	-	-	-	-
SR AFF (2)	13.54	3.1	.27*	-	-	-	-	-
SR AWAR (3)	14.16	2.3	.090	.122	-	-	-	-
SR EMP (4)	15.16	2.2	.28*	.287*	.524**	-	-	-
SR TOT (5)	42.68	5.7	.30*	.745**	.622**	.741**	-	-
DTLD (6)	75.51	5.6	.27*	.36*	.044	.33*	.31*	-

Note- Agg marks (percentage of aggregate marks), SR AFF (Affect domain of Self- regulation), SR AWAR (Awareness domain of Self- regulation), SR EMP (Empowerment domain of Self- regulation), SR TOT (Total score of Self- regulation), DTLD (Diagnostic Tool for Learning Disability).

Discussion

Self-regulation skills are significant attributes for the right turn of events and maintenance of well-being in young children. Higher levels of self-regulation skills are related to better scholastic accomplishment and better physical and psychological wellness. Several studies have reported the association of low degrees of self-regulation with academic underachievement, health risk behaviors, mental health problems, and delinquency [7].

Strategic intervention to improve cognitive and learning skills and self-regulation abilities among students with learning difficulty needs an hour to manage their academic performance. The PEABLS sessions were helpful in understanding and comprehending their and other's emotional and thinking process. It improved viable critical thinking aptitudes to address circumstances in everyday life that were earlier, causing distress and presenting a deterrent in accomplishing attainable academic performance.

The current investigation planned to assess the efficacy of PEABLS, an intervention program intended with the explicit goal to improve their cognitive skills, learning aptitudes, self-regulation abilities, and academic performance among the students with learning difficulty. The students in the experimental group outperformed on all measures as compared to the control group. The PEABLS sessions effectively brought positive cognitive-behavioral changes in students with learning difficulties and helped them perform better in curricular tasks.

The results are in tune with previous research findings. Borah [29] conducted a study and identified the significant characteristics of slow learners. Authors examined specific particular techniques like decreasing natural interruptions, shorter assignments, and oral assessments as most helpful. In another study, Malik [30]

provided training on the mental abilities of slow learners. He established that it is possible to bring the slow learners at par with the average-ability learners concerning the curriculum and the instruction designed for them. Another investigation done by Ho [31] assessed self-regulated learning skills in Hong Kong students and compared students in different nations that participated in the Program for International Students Assessment (PISA) study. The study investigated the connections between self-regulated learning and academic performance of 15-year-old students in Hong Kong. Their findings suggested a positive relationship between self-regulated learning skills and their academic achievement in reading, mathematics, and science domains.

Significant empirical evidence recommends that upgrading student's ability to self-regulate their attentional, behavioral, and emotional impulses drives the route for academic achievement [32-36]. Students who participated in the experimental group were able to analyze meta-cognitively and considered different viewpoints needed in a classroom setting and other places.

Conclusion

The advantages of self-regulation skills for school accomplishment have propelled a few school-based mediations focusing on school culture and classroom-based educational programs. The PEABLS helped students with learning issues and promoted self-regulation and management of students' behavior and emotions. Beneficiaries of PEABLS mediation showed enhancements in psychological aptitudes like working memory, verbal and composed articulations, self-regulation, and academic abilities. Nonetheless, to generalize PEABLS mediation's efficacy, similar intervention studies on different ages, grades, socio-economic status is recommended.

Conflict of Interest

The authors declared no conflicts of interest.

Ethical Approval

The study was approved by the Indian Council for Social Science Research (ICSSR file no. 3-80/17-18/PDF/ GEN) and the Department of Psychology, University of Delhi, which followed the Ethical Principles for Medical Research Involving Human Subjects established by the Declaration of Helsinki. This study was conducted under the supervision of a Clinical Psychologist.

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References

1. Venugopal M, Raju P. A study on the learning disabilities among IV and V standard children. Indian Journal of Psychological Medicine. 1988; 11:119-23.
2. Siqueiral CM, GurGe-Giannetti J. Poor school performance: an updated review. Revista da Associacao Medica Brasileira. 2011; 57(1):78-86.
3. Santosh AK. Scholastic backwardness in children attending a normal school. Andhra Pradesh Journal of Psychological Medicine. 2011; 15(2): 251-4.
4. Karande S, Kulkarni M. Poor school performance. Indian Journal of Paediatrics. 2005; 72:961-7.
5. Feinstein L. Social class differences in early cognitive development and regression to the mean. Longitudinal and Life Course Studies. 2015; 6(3): 331- 43.
6. Ramadas S, Vijayan VV. Profile of students referred for the assessment of scholastic backwardness at a tertiary care center. Indian Journal of Psychiatry. 2019; 61:439-43.
7. Pratima. Childhood adversities and learning difficulty in school children: Role of resilience and self-regulation. International Journal of Social Sciences Review. 2019; 7(3): 498-503.
8. Brodsky BS. Early childhood environment and genetic interactions: the diathesis for suicidal behavior. Current psychiatry reports. 2016; 18(9):86.
9. Fletcher JM. Dyslexia: the evolution of a scientific concept-short review. Journal of International Neuropsychological Society. 2009; 15(5):501-8.
10. Brock C, Schwartzman S: Os desafios da educação no Brasil. Rio de Janeiro: Editora Nova Fronteira. 2005.
11. Sebastian V. Ensuring Learning in Slow Learners. Educational Quest: An Int. J. of Education and Applied Social Sciences. 2016; 2(l):125-31.
12. Abbasi M. Efficacy of Cognitive problem-solving skills - to improve the quality of social relationships and Interpersonal empathy in students with learning disabilities. International Journal of Behavioural Sciences, 2014; 8(1):65-72.
13. Mokhberi A, Hashemi T, Bayrami M. The Effectiveness of Teaching Motivation Self-Regulatory Strategies in Academic Self-efficacy with the Moderating role of the Effects of Mastery-oriented and Performance-oriented Goals among Students. International Journal of Behavioral Sciences. 2019; 13(2):87-92.
14. Zimmerman BJ, Risemberg R. Self-regulatory dimensions of academic learning and motivation. In G. D. Phye (Ed.), Handbook of academic learning: Construction of knowledge. San Diego, CA: Academic Press; 1997. p.105-125.
15. Pintrich PR. Understanding self-regulated learning. In P. R. Pintrich (Ed.), Understanding self-regulated learning. San Francisco, CA: Jossey-Bass; 1995. p. 3-12.
16. Zimmerman BJ. Models of self-regulated learning and academic achievement. In B. J. Zimmerman & D. H. Schunk (Eds.), Self-regulated learning and academic achievement: Theory, research, and practice. New York: Springer-Verlag; 1989. 1-25.
17. Galla BM, Duckworth AL. More than resisting temptation: Beneficial habits mediate the relationship between self-control and positive life outcomes. Journal Personality Social Psychology. 2015; 109(3):508-25.
18. Bronson M.B. Recognizing and supporting the development of self-regulation in young children. Young Children. 2000; 55:32-37.
19. Bogg T, Roberts BW. Conscientiousness and health-related behaviors: a meta-analysis of the leading behavioral contributors to mortality. Psychology Bulletin. 2004; 130(6):887-919.
20. Flook L, Goldberg SB, Pinger L, Davidson RJ. Promoting prosocial behavior and self-regulatory skills in preschool children through mindfulness-based kindness curriculum. Developmental Psychology. 2015; 51(1): 41-51.
21. Felver JC, Tipsford JM, Morris MJ, Hiatt-Racer K, Dishon TJ. The effects of a mindfulness-based intervention on children's attention regulation. Journal of Attention Disorders. 2017; 21(1): 872-81.
22. Jones DJ, Greenberg MT, Crowley DM. Early social-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. American Journal of Public Health. 2015; 105(11):2283–290.
23. Swarup S, Mehta DH. The diagnostic test of learning disability (DTLD). Centre for Special Education, SNDT Women University. In S. Uppal, Sixth Survey of Educational Research, Volume I, New Delhi: NCERT. 1993.
24. Raven JC. Guide to Progressive Matrices (1938) (rev. ed.). London: H. K. Lewis. 1998.
25. Hrbáčková K, Vávrová S. The Development and Validation of the Self-Regulation Questionnaire in Children and Minors. Procedia–Social and Behavioural Sciences. 2014; 112:730-37.
26. Zimmerman BJ, Martinez-Pons M. Development of a structured

interview for assessing student use of self-regulated learning strategies. American Educational Research Journal. 1986; 23(4):614-28.
27. Zimmerman BJ, Martinez-Pons M. Student differences in self-regulated learning: Relating grade, sex, & giftedness to self-efficacy and strategy use. Journal of Educational Psychology. 1990; 82:51-59.
28. Mather N, Goldstein S, Eklund K. Learning Disabilities, and Challenging Behaviours. Baltimore, MD: Paul H. Brookes Publishing Co. 2015.
29. Borah R. Slow Learners: Role of Teachers and Guardians in Honing their Hidden Skills. International Journal of Educational Planning & Administration. 2013; 3(2):139-43.
30. Malik S. Effect of intervention training on mental abilities of slow learners. International Journal of Educational Science. 2009; 1:61–4.
31. Ho ES. Self-Regulated Learning and Academic Achievement of Hong Kong Secondary School Students. Education Journal. 2004; 32(2):87- 107.
32. Meltzer LJ. Creating strategic classrooms and schools: Embedding executive function strategies in the curriculum. In L. J. Meltzer (Ed.), Executive function in education: From theory to practice, 2nd ed. New York, NY: Guilford Press. 2018. p. 263–99.
33. Zimmerman BJ. Becoming self-regulated learnings: An overview. Theory & Practice. 2002; 41:64–70.
34. Jausˇovec N, Jausˇovec K. Working memory training: Improving intelligence–changing brain activity. Brain and Cognition. 2012; 79(2):96–106.
35. Alloway TP, Alloway RG. Investigating the predictive roles of working memory and IQ in academic attainment. Journal of Experimental Child Psychology. 2010; 106(1):20–29.
36. Duckworth AL, Quinn PD, Tsukayama E. What No Child Left Behind leaves behind: The roles of IQ and self-control in predicting standardized achievement test scores and report card. Journal of Educational Psychology. 2012; 104:439–51.