

Effect of Combined Integrated Learning Programme (CILP) in children with Learning Disabilities

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Abstract

Learning disabilities are heterogeneous group of disorders characterized by the unexpected failure of an individual to acquire, retrieve, and use information competently. It is estimated that around 15 million children suffer from this 'invisible handicap', thus average class in schools has about five students with learning disabilities. In order to encounter the problem, education authorities have issued some guidelines which are compensatory in nature and they lack a curative approach to the problem, till date the proper intervention is missing. Present study tries to interpret all the academic, therapeutic and psychological aspect through formulation of structured protocol in the form of intervention technique called Combined Integrated Learning Programme (CILP) and also finds efficacy along with guidelines of Punjab School Education Board (PSEB) on 30 subjects. The mean, standard deviation, t- value, F-value and post hoc analysis for all the variables were calculated. It was concluded that CILP has significant effect on the learning outcomes of children with learning disabilities.

Keywords: Learning Disabilities, therapeutic interventions, IQ, video games, Fine motor Skills and Cognition

Introduction

Learning Disabilities (LDs) are heterogeneous group of disorders characterized by the unexpected failure of an individual to acquire, retrieve, and use information competently. They are the most severe, pervasive, and chronic form of learning difficulty in children with average or above-average intellectual abilities because the concept of learning disability has a brief and turbulent history both conceptually and operationally, making them victims of over expectation and social obligations of parents due to their ability to deal intelligently with some topics while having problem in others. The estimated figures show that about 15 million children suffer from this 'invisible handicap' thus average class in schools has about five students with learning disabilities (*Thacker, 2007*). Epidemiological studies of learning

disabilities in India are burdened by problems ranging from identification, assessment, to socio-cultural factors unique to India. The characteristics of LD child may range from motor disorders to emotional disorders, perceptual disorders, symbiotic disorders, memory disorders and attention disorders (*Panda, 1997*). In order to deal with the problem, disciples of both academic and medical sector have recommended the different management strategies according to their expertise. However, the existing dilemma about the conceptual and operational problems and the beliefs and practices of teachers, psychologists, neurophysiologists, psychiatrists and therapists directed our attention to the need of integrated approach in order to rectify the problem. This inspires the formation of Combine Integrated Learning Programme in the present study. Thus to formulate and

explore the effects of CILP was the main aim of study.

Materials and Methods

Study consists of following two parts:

Step – I: Formulation of 12 weeks structured protocol called Combined Integrated Learning Programme (CILP).

The procedure for formulation of Combined Integrated Learning Programme was undertaken at the Department of Physiotherapy, Punjabi University, Patiala. It involved the thorough study of various articles from journals, text books, case studies and the incorporation of knowledge, generated in the light of experience of the guide and other researchers. The areas that have been included in the CILP includes fine motor activity and hand functions (*Palmstrom, 1998*), physical activity and motor skill training and problem solving approach and spatial orientation, enhancing learning process. (*Feng et al, 2007*) and abstract thinking and reasoning (*Hogle, 1996*)

Step – II: The experimental study in the form of randomized control trial was conducted in which the effects of Combined Integrated Learning Programme (CILP) were explored in children with learning disabilities.

Study was performed on 30 subjects taken from Government Middle School, Village- Goh, District- Ludhiana, Punjab, under the age group of 8-12 years. Study was performed in accordance with ethical considerations of the institute and their consent was taken prior to the study.

Variables: The dependent Learning Disability Diagnostic Inventory (LDDI) score, Standard Progressive Matrices (SPM) score, dart score, reaction time (RT), Teacher's Confidence (TC) and mini mental state examination score (MMSE) and the independent variables include Combined Integrated Learning Programme (CILP) and Punjab School Education Board (PSEB) guidelines.

Procedure: The children were screened through LDDI score and SPM Grade and those who satisfied the inclusion criterion were divided into 3 groups randomly. Each group consisted of 10 children. The inclusion criteria was age group 8-12years of both genders, subjects with at least one level in likely and one level in possibly grade of Learning Disability Diagnostic Inventory (LDDI), grade II- IV as per Standard Progressive Matrices (SPM) and dominant right hand. The exclusion criteria was subjects who have had any auditory or visual problem, whose profile had all scores above or below 6 grade of Learning Disability Diagnostic Inventory (LDDI), grade I or V as per Standard Progressive Matrices (SPM), physical disabilities and dominant left hand. Group A (Control Group), control was focused on subjects with limited activities and was supervised by teachers and parents. Group B (Experimental Group): This group received intervention as per existing guidelines issued by Punjab School Education Board (PSEB) strictly for 4 weeks. Subjects received 2 hours separate special education classes of 3 subjects- Mathematics, Science and English by qualified teachers in school premises Group C (Experimental Group): This group received intervention as per guidelines issued by Punjab School Education Board (PSEB) and also

according to Combined Integrated Learning Programme (CLIP) for 4 weeks. The data of all the outcome measures was taken at 0, 2 weeks and 4 weeks.

Results

Table 1 compares the mean age, height, weight and BMI among the three groups of the study. Mean age of the Groups A, B & C were 9.61, 9.71 & 9.59 years respectively. The three groups demonstrated similar mean values of height, weight and BMI.

Table 1: Mean and SD of Age, Height, Weight and BMI for the subjects of Group A, Group B and Group C

Demographic	Group A		Group B		Group C	
	Mean	SD	Mean	SD	Mean	SD
Age	9.61	0.69	9.71	0.68	9.59	0.88
Height	4.01	0.17	3.98	0.15	3.99	0.22
Weight	29.85	1.58	29.50	1.25	29.40	2.13
BMI	20.71	1.38	21.47	1.07	20.55	1.27

Table 2 describes the comparison of mean values for LDDI, SPM and Dart score; the t-value for Group C is observed to be significant.

Table 2: Comparison of mean values for LDDI, SPM and DART at Pre, Post 2 week, Post 4 weeks and Mean Difference (MD) within Group A, Group B and Group C

Groups	Session	LDDI			SPM			DART		
		Mean	SD	t value	Mean	SD	t value	Mean	SD	t value
Group A	Pre	63.20	6.18		51.95	16.98		8.70	1.57	
	Post 2 week	63.20	6.18	0.002	51.95	16.98	0.003	8.70	1.57	0.054
	Post 4 week	63.35	6.17	(NS)	52.45	16.50	(NS)	8.90	1.60	(NS)
	MD	0.15	0.24		0.50	1.58		0.20	0.42	
Group B	Pre	62.55	5.87		43.40	12.87		9.10	1.20	
	Post 2 week	63.10	5.94	0.203	43.90	13.03	0.015	9.20	1.03	0.078
	Post 4 week	64.20	5.86	(NS)	44.40	12.96	(NS)	9.30	1.16	(NS)
	MD	1.65	0.41		1.00	2.11		0.20	0.42	
Group C	Pre	65.65	8.39		47.10	15.32		9.20	1.32	
	Post 2 week	67.45	8.49	0.432	49.00	14.52	0.135	11.90	0.99	70.355
	Post 4 week	69.15	8.39	(NS)	50.50	14.06	(NS)	14.80	0.79	(S)
	MD	3.50	0.33		3.40	4.72		5.60	1.07	

Comparison of mean values for RT, TC and MMSE is presented in table 3. The t-value for RT and TC for Group C is observed to be statistically significant.

Table 3: Comparison of mean value for RT, TC & MMSE at Pre, Post 2 week, Post 4 week and Mean Difference (MD) within Group A, Group B and Group C

Groups	Session	RT			TC			MMSE		
		Mean	SD	t value	Mean	SD	t value	Mean	SD	t value
Group A	Pre	792.60	6.67		41.80	1.55		26.50	0.53	
	Post 2 week	792.30	6.65	0.07	42.00	1.33	0.19	26.50	0.53	0.000
	Post 4 week	791.50	7.63	(NS)	42.20	1.48	(NS)	26.50	0.53	(NS)
	MD	1.10	1.85		0.40	0.52		0.00	0.00	
Group B	Pre	794.90	7.08		40.60	1.43		26.40	0.52	
	Post 2 week	794.70	6.58	0.051	41.00	1.25	1.17	26.50	0.53	0.370
	Post 4 week	793.90	7.16	(NS)	41.50	1.27	(NS)	26.60	0.52	(NS)
	MD	1.00	1.25		0.90	0.57		0.20	0.42	
Group C	Pre	793.90	6.06		41.00	1.25		26.60	0.52	
	Post 2 week	777.30	6.99	63.22	42.50	1.08	30.21	26.80	0.42	2.478
	Post 4 week	759.10	7.62	(S)	45.00	1.15	(S)	27.10	0.57	(NS)
	MD	34.80	3.26		4.00	0.67		0.50	0.53	

Table 4 presents the comparison of mean values for LDDI, SPM and Dart at Pre, Post 2 week, Post 4 week and mean differences between groups A, B and C.

The F value for mean difference for LDDI and post 2 week, post 4 week and mean difference for Dart are observed to be statistically significant.

Table 4: Comparison of mean value for LDDI, SPM and DART at Pre, Post 2 week, Post 4 week and Mean diff. (Pre-Post) between Group A, Group B and Group C

Session	LDDI Group (A Vs B Vs C)		SPM Group (A Vs B Vs C)		DART Group (A Vs B Vs C)	
	F value	P value	F value	P value	F value	P value
Pre	0.561	P > 0.05	0.801	P > 0.05	0.374	P > 0.05
Post 2 week	1.271	P > 0.05	0.744	P > 0.05	19.707	P < 0.05
Post 4 week	2.061	P > 0.05	0.829	P > 0.05	72.288	P < 0.05
MD	249.270	P < 0.05	2.468	P > 0.05	192.971	P < 0.05

Table 5 presents the comparison of mean values of RT, TC and MMSE at Pre, Post 2 week, Post 4 week and the mean differences between group A, B and C. The F values for the mean difference for post 2 week for RT, TC and for post 4 week for RT, TC and MMSE are observed to be statistically significant.

Table 5: Comparison of mean value for RT, TC and MMSE at Pre, Post 2 week, Post 4 week and Mean diff. (Pre-Post) between Group A, Group B and Group C

Session	RT Group (A Vs B Vs C)		TC Group (A Vs B Vs C)		MMSE Group (A Vs B Vs C)	
	F value	P value	F value	P value	F value	P value
Pre	0.304	P > 0.05	1.867	P > 0.05	0.370	P > 0.05
Post 2 week	19.546	P < 0.05	3.889	P < 0.05	1.227	P > 0.05
Post 4 week	67.623	P < 0.05	20.089	P < 0.05	3.577	P < 0.05
MD	729.653	P < 0.05	110.419	P < 0.05	4.171	P < 0.05

Table 6 presents the post hoc values for LDDI, SPM and Dart for Groups A, B and C. The post hoc analysis for mean differences for Group A vs B, A vs C & B vs C for LDDI at post 2 week, post 4 week and mean difference A vs C & B vs C for Dart are observed to be statistically significant.

Table 6: Post Hoc Analysis of LDDI, SPM and DART

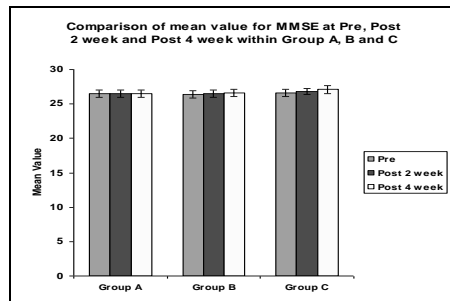
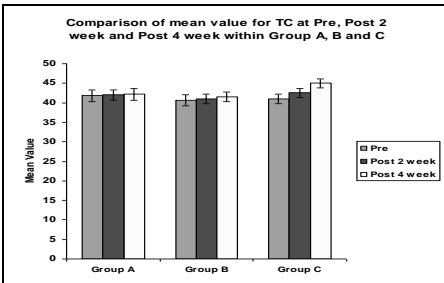
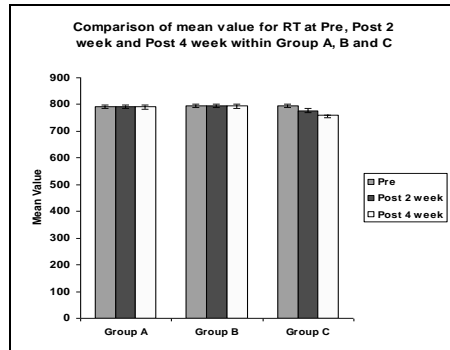
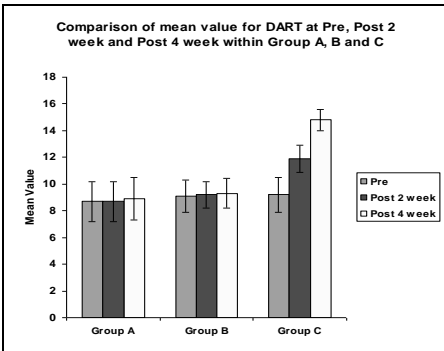
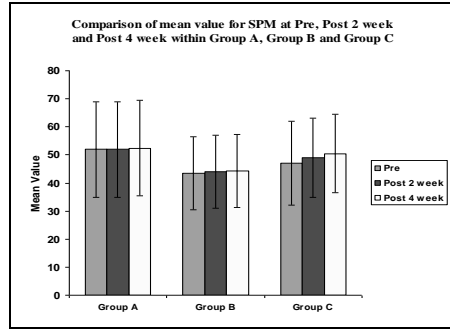
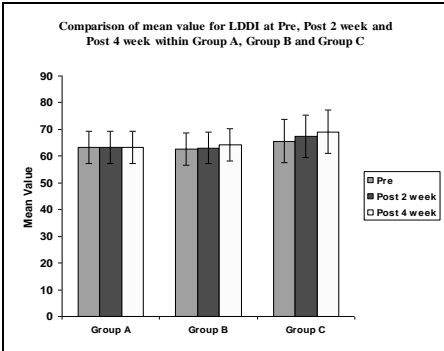
Group Comp.	LDDI				SPM				DART			
	Pre	Post 2 week	Post 4 week	MD	Pre	Post 2 week	Post 4 week	MD	Pre	Post 2 week	Post 4 week	MD
A Vs B	0.65 (NS)	0.10 (NS)	0.85 (NS)	-1.50 (S)	8.5 (NS)	8.0 (NS)	8.0 (NS)	-0.5 (NS)	-0.40 (NS)	-0.5 (NS)	-0.40 (NS)	0.00 (NS)
A Vs C	-2.45 (NS)	-4.25 (NS)	-5.80 (NS)	-3.35 (S)	4.8 (NS)	2.9 (NS)	1.9 (NS)	-2.9 (NS)	-0.50 (NS)	-3.2 (S)	-5.9 (S)	-5.4 (S)
B Vs C	-3.10 (NS)	-4.35 (NS)	-4.95 (NS)	-1.85 (S)	-3.7 (NS)	-5.1 (NS)	-6.1 (NS)	-2.4 (NS)	-0.10 (NS)	-3.7 (S)	-5.5 (S)	-5.4 (S)

Table 7: Post Hoc Analysis of RT, TC and MMSE

Group Comp.	RT				TC				MMSE			
	Pre	Post 2 week	Post 4 week	MD	Pre	Post 2 week	Post 4 week	MD	Pre	Post 2 week	Post 4 week	MD
A Vs B	-2.3 (NS)	-2.4 (NS)	-2.4 (NS)	-0.1 (NS)	1.2 (NS)	1.0 (NS)	0.7 (NS)	-0.5 (NS)	0.1 (NS)	0.0 (NS)	-0.10 (NS)	-0.2 (NS)
A Vs C	-1.3 (NS)	15.0 (S)	32.4 (S)	33.7 (S)	0.8 (NS)	-0.5 (NS)	-2.8 (S)	-3.6 (S)	-0.1 (NS)	-0.3 (NS)	-0.6 (NS)	-0.5 (S)
B Vs C	1.0 (NS)	17.4 (S)	34.8 (S)	33.8 (S)	-0.4 (NS)	-1.5 (S)	-3.5 (S)	-3.1 (S)	-0.2 (NS)	-0.3 (NS)	-0.5 (NS)	-0.3 (NS)

Table 7 presents the post hoc values for RT, TC and MMSE for Groups A, B and C. The post hoc value for post 2 week, post 4 week and mean difference

for Group A vs C & B vs C for RT and TC and mean difference for A vs C for MMSE are observed to be statistically significant.



Learning disability is a term that refers to a group of varied and often multidimensional disorders as the characteristics of a child with learning disability are often diverse and complex, however the most commonly recognized performance difficulties in learning are associated with academic success (Darcy, 2007). As a result of lack of awareness and difficulties in the diagnosis and identification, both parents and teachers either ignore the deficiency or blame it on the child's personality branding it as

laziness, attitude or aggression. This leads to extreme stress and children negotiate these stresses with resilience and mastery. In Mumbai four students committed suicide in a period of three days and all were related to academic failure and stress (Malik, 2009).

In order to deal with the problem, disciples of both academic and medical sector have recommended the management strategies according to their expertise. Taken into consideration the role of psychologists, teachers, neuro-

psychiatrists and therapists, it was evident that there is lack of combined effort in the form of integrated approach in order to deal the problem on a bigger front. This is how the formulation of Combined Integrated Learning Programme (CILP) comes into play and the areas that have been included in the CILP includes fine motor activity and hand functions through games like spinning tops, painting (Palmstrom, 1998), motor skill training through games like dart, physical activity and perception training through outdoor games like basketball (Carlson et al, 2008) problem solving approach, reasoning and improvement in eye – hand co-ordination through video – games (Feng et al, 2007), cognitive skill games like rubiks, fun puzzles and numerical puzzles.

In order to find the effect of CILP, experimental study was conducted in form of randomized control trial. This randomized control trial was performed in 3 groups (10 subjects each) of 8-12 years school going children with learning disabilities. Group A – Control Group which was controlled against any old or new intervention method whereas Group B – Experimental Group received intervention according to PSEB guidelines and Group C - Experimental Group received intervention according to PSEB and CILP protocol. The data is collected and analyzed using SPSS 16 software and mean, standard deviation; t-value, one-way ANOVA and Post hoc Scheffe tests were applied. The present study found that Group C is better than Group A and Group B for all the variables. Going through statistical analysis, it is revealed that group C stands out to be statistically significant from Group A and Group B in dart score,

reaction time, teacher's confidence and MMSE score.

Conclusion

From the present study, it can be concluded that CILP, the protocol formulated for learning disabled children, has been found to be an effective tool in enhancing the learning outcomes than the conventional guidelines of PSEB. It also emphasized that curriculum of schools should be based on problem solving approach and interactional study is more beneficial. It has also been observed that longitudinal study is required to know the extreme effects of CILP.

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