The Impact Of RTI Model Based Remedial Classes On The Performance Of The Low Achievers In Hindi Language

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Abstract: Students from low socioeconomic background often fall behind early on their educational journey. Without adequate and timely support to address their learning needs, they continue to perform poorly. Eventually, the students lagging behind will keep failing to learn the basic literacy skill and are not able to adjust according to class learning pace and gradually lose interest in learning and most likely will end up dropping out of school before completing the basic education.

Remedial education is an important element among the efforts to improve educational outcomes of low performing students of different ages and in very diverse environments, particularly the most disadvantaged. This remediation programs acknowledges the diversity of the interventions in terms of intensity, duration and mode of delivery. The response to interventions (RTI) model makes possible the early detection of learning problems and early intervention for students at risk.

Wide variety of remedial program are designed and implemented by schools to bring these students in mainstream's learning schedule. However, very few studies have been done to assess the impact of these programs on the improvement of student's achievement level. There are also different views regarding the duration of remedial teaching. This study was planned to assess the effectiveness of RTI using different teaching tools among the low achievers of class 5th in Hindi language. Findings of this study shows, that the RTI model with applied tools based remediation programs quite helpful to improve the learning of struggling student.

Keywords: Remedial class, impact, students' learning achievement, Response to Intervention, Covid-19 pandemic, learning loss.

I. INTRODUCTION

Children who grow up in a literacy-rich environment grow up to be readers, writers, and successful learners. However, who comes from low socio-economic background and if in case be a first generation learner, with least family support and lack of motivation, child's learning ability is generally compromised. Therefore to make such students-proficient learner in early grades is a challenging job for a teacher.

In school Saray Gulahria 86 students are enrolled in class 5th, all undergoing same teaching process in Hindi language classes. Even though some were found lower in achievement compared to others due to differences in learning aptitudes and various other factors. On the basis of regular test performance, 34 students were identified, performing below the set bench mark and were struggling at different levels.

Remedial teaching is one of the most acceptable solutions for low achievers (Selvarajan P- 2022). Huang (2010) indicated that the goal of remedial instruction is to provide low-achieving students with more chance to reinforce the basic knowledge in common subjects.

Therefore a comprehensive remedial program was prepared, to provide extra assistance to these students. School head teacher, SMC members and concerned parents were also informed about the program. Remedial class framework was designed to address a wide variety of student's needs, such as:
- ✓ Poor academic performance

- ✓ Chronic absenteeism
- ✓ Behavioral and social-emotional issues
- ✓ Needs for support outside of school, such as family involvement and extracurricular activities

Response to intervention (RTI) aims to identify struggling students early on and give them the support they need to thrive in school. RTI system also gives strong emphasis on tracking how students react to instructional interventions.

The five major steps to intervention were "5 A's": Ask, Advise, Assess, Assist, and Arrange on problems to help struggling students catch up.

Teaching with RTI mitigates the impacts of learning deficits with a multi-tiered approach that identifies and addresses students with learning difficulties. The core components of RTI mode are high-quality classroom instruction, universal assessment, continuous monitoring of progress, research-based interventions, and fidelity of educational interventions (Bradley, R, et. Al. 2005). These models present a general framework that allows various methods of implementation, although they differ in the number of tiers of support (Fuchs, D. et. Al., 2006). The peculiarity of this model is that the more severe the students' needs, the greater the intensity of the intervention (Fuchs, D. et. Al., 2003). RTI can be a powerful tool for helping students get caught up because it involves using data to identify children who are not making expected progress, then starting an intervention as soon as possible

RTI or 3-tier intervention model was adopted to give remedial classes involving the whole class. Peer tutoring is another effective remedial measure that has resulted in increased students' achievement (Horbath, K., 2011). High achieving students can be made to tutor their low performing peers. Its effects are double fold; tutor as well as tutee benefit academically from such a partnership and tutees get their self-esteem boosted (Clarkson & Luca, 2011)

Effective remedial teaching strategies, simplified concepts, more examples/practice, personalized feedback, multi-sensory teaching methods (visual aids, hands-on activities), technology-based resources, (educational apps, E-books) were used for better understanding and retention of information.

Various learning material provided by the department (Print rich material, big book, picture chart, teachers Guide, workbooks), self-prepared E-Book (Swar gyan, Meri apni varnmala) were intensively used to addresses students learning difficulties and mitigating the learning gap.

The objective of this study was to examine whether RTE based remedial classes improve the academic performance of students.

II. REVIEW OF LITERATURE

Every individual has different learning abilities and styles, and they possess and represent knowledge in diverse ways. Some students learn more effectively when taught with their preferred methods (Ridin, R.J and Sadler Smit,E 1997). Remedial interventions are the process of creating more time for our academically challenged students to get additional academic supports, so that these groups of children achieve incremental growth in their score card.

An academic improvement from remedial classes may have long-term benefits depend on the type of remediation and how systematically it is organized. Remedial classes should include use of supplementary materials to make lesson clear and meaningful (Schwartz, 2012). The tutor should use different strategies to cater to the needs of individual students. Eventually, precise and comprehensive diagnosis methods are needed to facilitate students' classification and as a result designing or choosing appropriate remedial strategies that render to better performer.

Reading failure has been shown to not only have a negative impact on academic achievement but also on extracurricular activities and peer relations (Stanovich. K.E., 1986). Studies of the relationship between socioeconomic level and reading and spelling skills shows very strong correlation between socioeconomic level and basic literacy skills. The RTI model stresses early identification and intervention and frequent monitoring of basic skills. RTI model is a viable one and is an alternative to expensive and resource intensive approaches.

Systematic instruction in literacy skills was largely responsible in part for the decrease in influence of socioeconomic level. Typically, the relationship between socioeconomic level and literacy skills increases as children remain in school.

Lipka et al. (2010) stated that the number of children with reading problems decreased significantly as a result of the RTI approach. Most of the children identified as being at risk in kindergarten were reading at average or above average levels, even in reading comprehension. Systematic instruction in literacy skills was largely responsible in part for the decrease in influence of socioeconomic level. Typically, the relationship between socioeconomic level and literacy skills increases as children remain in school. However, the teaching in this district was responsible, at least in part, for the powerful effects. In summary, the RTI model is a viable one and is an alternative to expensive and resource intensive approaches

Response to Intervention (RTI) is a 3-tiered remedial intervention that is popularized in K-12 schools across the USA. At each tier of the intervention, strategies used are research based and systematic according to the need of the individual child and have proved positive in screening process. In the work done by Fuchs (2006), the strategies become intensified and more individualized as the screening process goes on.

Classroom teachers receive professional development in effective instruction and ways to enhance differentiation and intensity through flexible grouping strategies and evaluations of progress (Tier 1, primary intervention). Children who do not achieve specified levels of progress based on local or national benchmarks receive additional instruction in small groups of three to five students for 20–40 minutes daily (Tier 2, secondary intervention). If the child does not make adequate progress in secondary intervention, an even more intensive and individualized intervention (Tier 3, tertiary intervention) is provided that may involve smaller groups, increased time in intervention (45–60 minutes daily), and a more specialized

teacher. Progress is monitored weekly or biweekly. These models link with special education because inadequate instructional response allows for determination of adequate and inadequate responders and provides a framework for implementing seamless interventions between general and special education. RTI or 3-tier intervention model can be adopted to give remedial classes involving the whole class. Peer tutoring is another effective remedial measure that has resulted in increased students' achievement *(Horbath, 2011).*

III. RESEARCH METHODOLOGY

RESEARCH DESIGN

This study employed mixed mode (quantitative and qualitative) research methodology. stated that mixed method research comprises of collecting, analyzing, and interpreting the quantitative and the qualitative data in a single study or series of studies that examined the same underlying phenomenon (Cameron, R.,2015)

In this study, the performance test items were developed to compare the performance level before and after the interventions for 3 weeks. Finally, to assess students' level of satisfaction for the program, the attitude survey questionnaire using 5-point Likert scale was developed and administered after completion of the remedial program with participants. (Linkert R. 1932).

QUANTITATIVE MODE

The pre-test (100 marks for assessing the phonological awareness, oral vocabulary skills, words, decoding, reading comprehension reading fluency and basic knowledge of writing) prior to implementation of the remedial program was administered to assess the level of knowledge student possessed in Hindi.

At the end of remedial classes the same post-test was administered to study impact of remedial teaching on their reading and writing ability. A comparative statistical analysis was done using paired t-test within the groups. Mean, standard deviation and significance value were used to infer the data.

The objective for implementing pre-test was to determine the level of knowledge that the student possessed prior to implementation of the remedial program. So, it was conducted before the start of the program.

73 students were categorized in three Tiers to address their learning needs. 13 students due to regular absence (as their parents are migrant workers) were not part of this remedial program.

TIER 1

WHOLE CLASS INSTRUCTION

The teaching strategies and instruction used here reflect both methods of differentiated instruction and universal design for learning. Classes were structured and planned to reach every student in the class and the curriculum goals were not modified. On the basis of class tests 39 students from total of

73 were found proficient in reading Hindi with proper understanding rest 34 needed Tier 2 support.

TIER 2

SMALL GROUP INTERVENTIONS

Based on their shared language skill levels 34 students were sorted in this tier. Along with Tier- 1 support, additional quality instructional interventions of 45 minutes thrice a week for 6 weeks was provided for supplemental reading support through a class wide peer tutoring in small group of 4-5. Even though 10 students were found still struggling with material after a period of group instruction at Tier 2, they were moved to Tier 3 for further assistance.

TIER 3

INTENSIVE INTERVENTIONS

For providing high-quality instruction, frequent progress monitoring and data-based decision making 10students in this tier were divided in 3 small groups. Along with regular Tier 1 support, intensive Tier 3 support of daily one hour was provided outside the regular classroom for mastering the most basic foundational knowledge and skills required for literacy
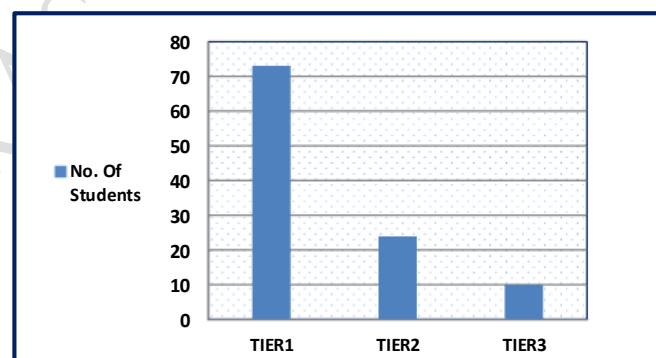

Figure 1: 3 TIER distribution of students

QUALITATIVE MODE

Along with quantitative approach qualitative mode was also used to support the findings of research. Likert five point scale based questionnaire was used to allow all students to express how much they agree or disagree with a particular statement.

The survey questionnaire was administered with participating students to investigate their learning satisfaction towards the 6 week remedial program. The questionnaire consisted of 20 items around students' attitude, interest, participation and learning satisfaction. All participating students answered the questionnaire

IV. RESULTS

Quantitative Analysis of data

Remedial teaching	No of students	MEAN		Mean difference	Standard deviation	
		Pre-test score	Post-test score		Pre-test	Post-test
	34	34.6	61.4	26.8	13.4	19.9

Table 1: Comparison of pre-test and post-test score

The results of Pre-test before prior to implementation of the remedial program and post-test after the completion of remedial program were analyzed. As presented in Table 1, the mean of pre-test and post-test score were 34.6 and 61.4 respectively. Mean difference was 26.8. The standard deviation was 13.4 in pre-test and 19.9 in posttest respectively

The two-tailed P value is less than 0.0001 by conventional criteria; this difference is extremely statistically significant, showing immense positive impact of RTE based Remedial Classes on the Performance low Achievers. A large standard deviation indicates the data observed is quite spread out.

CONFIDENCE INTERVAL

The mean of Group One minus Group Two equals -26.61
95% confidence interval of this difference: From (30.1 to 23.3)
Intermediate values used in calculations:
t = 16.1885df = 33
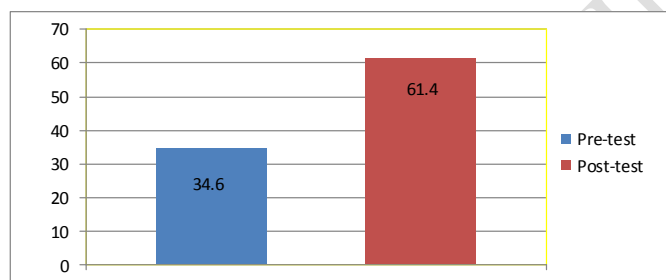standard error of difference = 1.662

Figure 2: comparison of mean score between pre-test and post-test

As presented in *Figure 2*,the class average score increased from 34.6(prior to implementation of the remedial program) to 61.4 (after the completion of remedial program) showing an improvement of 84.9%. Further impact of remedial teaching was analyzed separately on Tier 2 and Tier 3 students (Table-2).

TIER	No of students	I. MEAN		Mean difference	Standard deviation	
		Pre-test score	Post-test score		Pre-test	Post-test
1	73 (39+24+4+6)	39 Proficient in reading Hindi with proper understanding				
2	24	41.25	72.45	31.5	8.25	7.06
3	10	18.91	34.40	15.50	9.63	13.20
	4	29.50	47.25	17.75	5.06	8.73
	6 (Veryslow learner)	11.83	25.83	14.00	1.32	6.30

Table 2: comparison of pre-test and post-test analysis of different tiers

As shown in Table 2, the mean of the pre-test and post-test of TIER 2 students were 41.25 and 72.45, respectively, the mean difference was 31.5.The standard deviation was 8.25 in pre-test and 7.06 in posttest respectively.

Ten students of TIER 3 were further divided. From total of 10 students 6 students were identified as very slow learner. Their mean of the pre-test and post-test score were 11.83 and 25.83, respectively, the mean difference was 14.The standard deviation was 1.32 in pretest and 6.03 in post-test, respectively. These students sowed least impact of remedial program on their learning abilities instead of intensive high quality intervention. Rest 4 students from this TIER showed improvement, the mean of the pre-test and post-test score were 29.5and 47.25, respectively, the mean difference was 17.75. The standard deviation was 5.06 in pre-test and 8.70 in post-test respectively. The mean of the pre-test and post-test of TIER 3 students were 29.5and 47.25, the mean difference was 17.75. The standard deviation was 5.06 in pre-test and 8.70 in post-test respectively.

In TIER3, 6 students were identified as very slow learner. The mean of the pre-test and posttest of TIER 3 students were 11.83 and 25.83, the mean difference was 14. The standard deviation was 1.32 in pre-test and 6.30 in posttest respectively. These students show least impact of remedial programs on their learning abilities instead of intensive high-quality intervention.
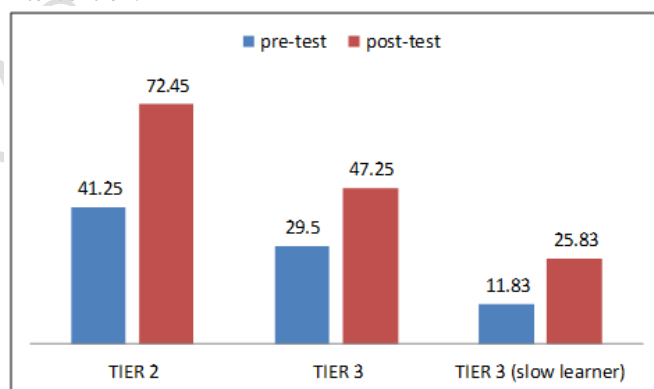

Figure 3: Comparative analysis of performance of tiers 2 and 3

As presented by Figure 3, 24 students of TIER 2 showed improvement in their learning by raising class mean score from 41.25 to 72.25 prior and after the remedial program implementation respectively. Similarly 10 students of TIER 3 also showed improvement by raising class mean score from 18.9 to 34.4 prior and after the remedial program implementation respectively. 6 students from TIER 3 were identified as very slow learner limiting the average mean score of the tier.

For deep analysis the pre-test and post-test scores were further segregated into specific levels of reading and writing. As shown in Table-3, more progress was noticed in reading ability. Each area in writing also showed improvement but students are still facing problem in writing answers of paragraph based question.

Reading	Max. Marks	Pre-test		Post-test		Mean-difference (95% C.I.)	p-value	%Increase from baseline
		mean	S.D	mean	S.D			
Words	20	8.1	3.9	14.1	4.2	6.0 (5.1-6.9)	<0.01	105.79
Sentences	20	6.4	2.9	12.5	4.2	6.1 (5.2-6.9)	<0.01	110.6
Paragraph	10	3.3	1.7	6.5	1.9	3.2 (2.7-3.8)	<0.01	122.9
	50	17.8	7.9	33.1	9.8	15.3(13.3-17.2)	<0.01	105.2
Writing								
Alphabets	12	10.2	2.2	10.9	2.1	0.7 (0.3-1.1)	<0.01	8.3
Words	26	5.3	3.9	12.6	5.8	7.3 (5.5-9.0)	<0.01	180.6
Paragraph based Question-Answer	12	1.2	1.4	4.5	2.9	3.3 (2.5-4.1)	<0.01	148.8
	50	16.8	6.4	28.1	9.9	11.2 (8.9-13.5)	<0.01	74.9
TOTAL	100	34.6	13.4	61.4	19.9	26.8 (23.3-30.1)	<0.01	84.9

*Adjusted for baseline

Formula used to calculate %Increase from baseline = (Post value−Pre Value) / Pre Value*100

Above formula was applied on all individual values and thereafter mean is calculated

Table 3: Comparison of mean scores in pre-test and post-test in specific language skills
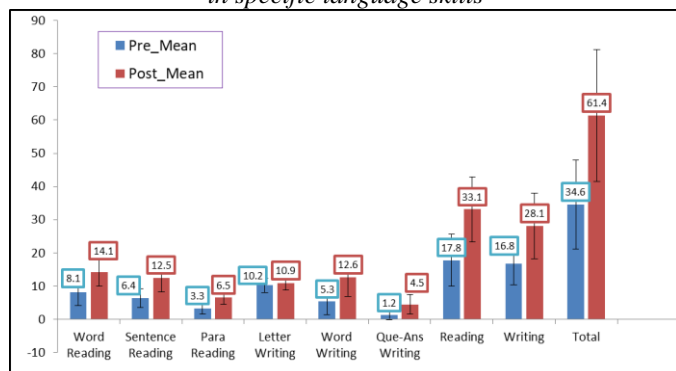

Figure 4.1: Graphical representation of improvement at the specific skills of learner's reading and writing
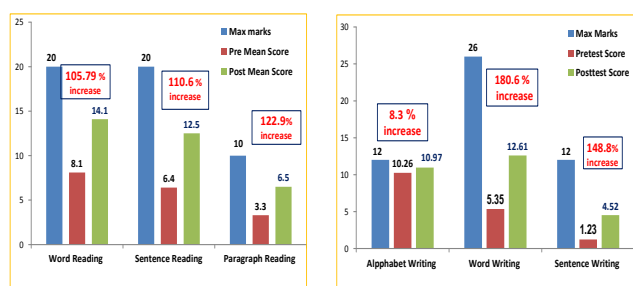

Figure 4.2: Graphical representation showing improvement indifferent levels of reading and writing

Figure 4.2 shows remarkable improvement in different reading and writing skills after completion of remedial program on the basis of class mean score. Improvement of 105.79, 110.6 and 122.9 % were observed in Word reading, Sentence reading and Paragraph reading ability of students

Similarly improvement of 8.3 %, 180.65% and 148.8 % was found in Alphabet writing, Word Writing and Sentence writing skills.

QUALITATIVE ANALYSIS

It was observed that students showed more interest, were motivated to take part in discussion, and the frequency of clarifying doubts with teachers and peers were seen to increase in course of the intervention. It is interpreted as positive impact brought about by the intervention.

Table-4 shows Summary of Students' Satisfaction Survey Questionnaire, Satisfaction Mean, Standard Deviation and rating percent.

S. No	Question	Satisfaction Mean	Standard Deviation	Rating % (Agree +Strongly Agree)
1.	Reading Hindi was very difficult work for me	4.0	0.61	82
2.	I failed to learn in routine classes because of inadequacies in my learning strategies	4.0	0.81	82
3.	Six week remedial session was enough.	4.2	0.79	82
4.	I took remedial classes seriously and followed instructions better than normal classes	4.4	0.74	91
5.	The pace of teaching was in accordance with our learning	4.0	0.83	82
6.	Remedial class created strong bond with teacher as individual attention was provided to us.	4.4	0.56	97
7.	In remedial classes I was helped by my friends and was encouraged to participate in the team discussions	4.3	0.80	85
8.	Remedial classes created awareness of the importance of Listening/Speaking and Reading/Writing in improving reading and writing skills.	4.4	0.66	91
9.	The infusion of creative, multi-sensory, TLM and ICT based teaching methodology was attractive and made our learning easy and interesting	4.7	0.52	97
10.	Teachers remarks in answer scripts are of little help in correction of errors	4.0	0.72	85
11.	Oral feedback by teacher on mistakes and ways of avoiding it helped in the correction of mistakes.	4.3	0.77	88
12.	Regular Conduction of Small formative tests helps in	4.3	0.88	85

	monitoring the progress in remedial teaching			
13.	Sharing of the learning experiences as a group makes the students aware that it is common to face difficulties in learning	4.2	0.78	85
14.	Remedial classes relieve us from the stress of delayed learning and motivate us to try till learning gets complete	4.0	0.63	88
15.	Summative assessment is important in remedial teaching as it serves as a tool for checking the effectiveness of remedial teaching.	4.5	0.74	91
16.	Remedial classes helped in improving our Hindi reading and writing skills and boosted our confidence level.	4.5	0.75	91
17.	This remedial program help in creating close intimate bond with our teacher and provided safe and affirming learning environment in the classroom.	4.2	0.64	88
18.	My Hindi teacher was successful in making me relearn-	4.5	0.70	94
19.	Remedial class was helpful and know I am confident about my own abilities after the remedial classes.	4.2	1.03	82
20.	I recommend such remedial classes in future.	4.2	0.85	85

Table 4: Summary of Students' Satisfaction Survey Questionnaire

The overall analysis from the questionnaire revealed that 82% to 97% of learners "Strongly Agree" or "Agree" on all questions asked in the questionnaire.
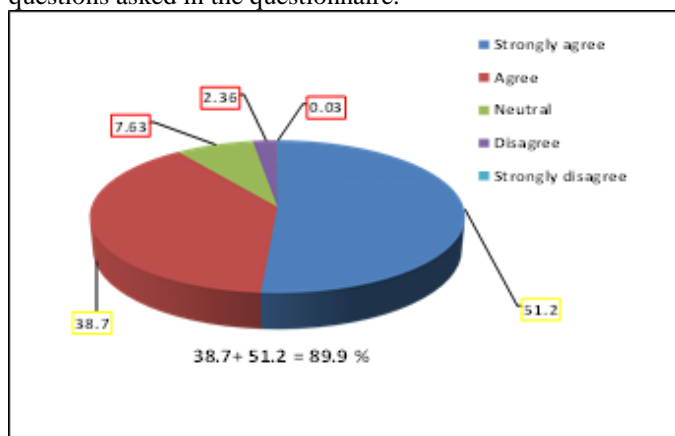

Figure 7: Satisfaction Survey Questionnaire Analysis

The Satisfaction score mean also lie between 4.0-4.7 out of 5, presenting high satisfaction level of learner for the Remedial program .The value of Standard Deviation also lie between 0.52-1.03. This low standard deviation means data are clustered around the mean and are reliable.

V. DISCUSSION AND CONCLUSION

RTI is definitely an effective way to determine student's need and how to meet their learning gaps. When teachers use RTI strategies, they can provide more individualized instruction that supports each child's needs without making them feel singled-out or excluded from their peers. By evaluating and supporting each student, it can help them avoid falling behind with necessary care.

The 3 tier RTI model based remedial program has resulted in improving the students' level in Hindi language learning. An increase of 84.9% was recorded in class means score after the implementation of this Remedial program.

This 50 days remedial program showed high level of improvement in reading ability of participants. Positive impact on fluency and ability of reading with understanding was also observed. As a result, finally their confidence level increased. The improvement in reading ability showed direct impact on their writing ability. Further individualized interventions are recommended to assist them for more improved writing ability.

The duration of remedial classes may be increased or decreased as per the learning gap and student's strength, but very long duration should be avoided as students and teachers may lose interest in teaching and learning process. The duration of class must be shared with students on commencement of program. Clear mindset will assist them in maintaining self- motivation for focused learning during the whole program.

It was observed that student's frequency of clarifying doubts with teachers and peers were seen to increase in course of this intervention. It is interpreted as positive impact brought about by the intervention.

Based on these findings, RTI model based remedial programs was found to be an effective tool for assisting struggling students. Therefore, it can be recommended that School should plan awareness sessions with School Management committee members and parents about of the importance and benefits of such remedial programs for their children and to cooperate with remedial teachers. It also recommended stakeholders to organize intensive workshops on RTI based remedial education for training teachers on how to remediate and teach low achievers.

VI. LIMITATIONS

Six students in TIER 3 showed least impact of this remedial programs they might have a some learning disability and likely to need more advanced training.

Thirteen students due to regular absenteeism (Parents are migrant labour) could not become part of this remedial

program. On returning back they will be provided assistance through similar remedial program.

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