

Effectiveness of Station Rotation Blended Learning Model in an Inclusive School

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ABSTRACT

The Station Rotation model is an intergenerational combination of the classroom of yesterday with the classroom of the future through 3 stations or tables set for students to study as groups. This model offers a platform for all levels of learners to be included and attended by the teacher on a one to one basis within the classroom effectively. This practice is prevalent mostly in the US and European countries and done to accommodate all kinds of learners especially the special needs students. The present study done in two Grade 4 classrooms of 30 students to evaluate and analyse the effective outcomes of this method. One class following traditional versus one following the Station Rotation Model was studied. Results showed that compared to the traditional teaching approach the learning outcome is higher in all the learners ($p < .05$). The main advantage of the model is that students were less distracted and more interested to learn than ever before. The study concludes that the Rotation Stations can be a first step toward personalizing learning for students and helping in empowering all kinds of learners as well as achieving better all round curricular performances in Schools.

Keywords: *Station Rotation Blended Learning, Personalized Learning, Inclusive Education.*

The traditional approach to learning is to teach the way the teacher can and not the way the students learn and majority of the education landscape has a one-size-fits-all feel, where each student's education is of a uniform mode and undifferentiated. Here all learners are expected to progress at the same pace and time through the same curriculum. Personalization theory pushes educators to think outside the box by emphasizing the need for learners to be involved in designing their own learning process (Campbell & Robinson, 2007). The personalized learning environment provides for opportunities where a learner can set their own goals of learning, set a pace comfortable for them and engage in a reflective process for its attainment. They can afford to be flexible enough to take their learning outside the confines of the traditional classroom. The Station Rotation Blended Learning Model (Apricot Ann Truitt, 2016) revolves around the personalization theory where each learner is catered personally in a general setting. How can this be fruitfully done is what we need to analyse. "I believe Data Driven Decisions are the backbone of personalized learning. We must use data to see what students need and don't need in order to individualize instruction and choose meaningful

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activities for our students that are at just the right level.” Tammy Hermance, Blended Learning Coach, Greeley-Evans School District 6 (CO).

According to Miliband (2006), there are five phases of personalized learning: Personalized learning is tailoring learning for each student’s strengths, needs and interests including enabling student voice and choice in what, how, when and where they learn to provide flexibility and supports to ensure mastery of the highest standards possible.

1. Assessment phase –In this phase the teacher and students work together in a formative manner to identify strengths and weaknesses through Pre and Post assessments.
2. Teaching and learning phase – In this phase there is a freedom for teachers to offer and students to select learning strategies.
3. Curriculum choice phase – In this phase the student gets to choose the curriculum, creating a pathway for student choice.
4. Radical departure from typical education models phase – This phase is built on student progress, and it provides teachers the flexibility to choose their own teaching strategies.
5. Education beyond the classroom phase – The ideal learning environment in compliance with the social and community setting and connections are used (with the help of the teacher, when needed) to create their ideal learning environment.

Personalization is an understanding that an individual’s specific interests, individual styles and specific needs can make work and learning meaningful and authentic. This makes learning a wholesome process making the student ask himself “What is best for me?”. It is all about the rapport and relationships the teacher builds over the time knowing each individual student based on their academic and personal interests.

Personalization help the students to interact with the curriculum material at hand for own assessment as it will help meet and suit their individual needs, it reflects their zone of optimal development, and gives them the opportunity to access resources to progress at their personal pace of learning .“Targeted Instruction allows a teacher to address individual needs by giving a small number of student’s direct instruction on a skill that will move them forward towards their specific goal.” Kala Compton, Instructional Coach, Yuma School District One (AZ) Students thus learn to analyse and plan their lessons and this makes them to choose in a better way what to include and what to delete .Contributions from students, parents, and teachers are also taken into their consideration to help provide a path for ubiquitous learning to address students’ individual needs, interests, and learning styles. Personalization is every student learning at his/her own pace using the tools that help them learn and improvise on their strengths. Personalization is engaging the learner in the most effective way and in their comfort zone , determining where they need to go and to what level , finding and scaffolding the right zone of proximal development to get them there.

Earlier research works have given numerous definitions of the station rotation blended learning approach .Studies done in the Symonds Elementary school Keene, NH that it outperformed the state and district on NECAP tests every year since 2010, over the past 10 years ,the average 5th grade score is one year above grade level in both Math and Reading (NWEA). The highlander Charter School, Providence RI typically outperformed the state 110 % , students with disabilities outperformed by 192% . In 2016, 11th Grade students outperformed the state in both reading and writing on the PARCC test.

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“Blended learning is about the ability to personalize instruction. The only way to do that is for teachers to use the data constantly to individualize instruction and provide targeted instruction. It isn’t about the technology; it is about the instructional model change. Blended learning is not about whether you are just giving a kid a computer.” – Samantha Sherwood, Assistant Principal, Bronx Arena High School in New York City.

What blended learning offers is a rational approach, focused on redesigning instructional models first, then applying technology, not as the driver, but as the enabler for high-quality learning experiences that allow a teacher to personalize learning and manage an optimized learning enterprise in the classroom. The outcomes are simply magnificent as smart blended learning is richer and deeper interactions between teachers and students (and between students themselves) than in traditional classrooms. Integrating technology and teaching allows students to fully master content and skills, and at a pace that’s right for them. An average classroom sets a “speed limit” for the class which is bounded by grade-level standards and assessments which are decided by the teachers and students are expected only to perform to achieve the same. This puts the students at a stressful position making it hard for some kids to catch up and holding others from moving ahead when they’re ready. But blended learning peps up students’ learning velocity, allowing them to go further and faster. They never realise it but they go ahead much more than they ever realise.

Blended learning is not about simply adding online computer games or videos to a student’s day or homework time. It is also not just about keeping laptops ready in each station. It is also not an isolated platform for students to engage in their own work devoid of any social interaction. There are operational implications of blended learning instructional models which include structural changes that can explore more effective use of human resources, facilities, time, resources, and technology to support personalized learning. “When implemented effectively, a blended learning program can make better use of instructional resources and facilities, and increase content and course availability, thus speeding up the pathway to graduation for students” (Dzuiban et al., 2004).

Horn and Staker’s (2013) definition expresses that “blended learning is any time a student learns, at least in part, at a supervised brick-and-mortar location away from home and, at least in part, through online delivery with some element of student control over time, place, path, and/or pace. The modalities along each student are learning path within a course or subject connected to provide an integrated learning experience”. Blended instruction combines the best of empowering technology and human touch so we can help each student learn more than ever before.” Alex Hernandez (2016), partner at the Charter School Growth Fund.

Blended learning environments provide a support like a Global Positioning System (GPS) for students and teachers helping them to navigate with flexibility along individual pathways for a real personalized learning. This can be like the educational discovery for this generation fitting to cater to the needs of each students using their own GPS-like dashboard for learning so that each learner would know if they were on track toward their destination themselves. They would know regarding their graduation, college and career-readiness, every moment of every day and every point along the way.

Parents and educators no longer have to wait until the end of a grading period or school year to take a summative assessment for accountability to show whether they are on or off-track. With a such a GPS, the moment a student makes a wrong turn, the system would help alert

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the student know to turn around, to seek help and exactly where to find resources to get back on their route toward success and graduation.

In “How Children Learn,” which was developed by the International Academy of Education, there are 12 elements, with supporting research, that were developed to guide the design of instruction and curriculum to support children’s learning (Vosniadou, 2001). These design elements, illustrated in Table 1, should be used to guide the design of personalized learning environments.

Objective

To find out the effectiveness of the Station Rotation Blended Model of learning among learners in a school with inclusive practices

METHODOLOGY

Experimental design with control

In the present study, 30 students each from two divisions of grade 4 class from a CBSE Inclusive school were studied. One group was randomly selected as the experimental and other control. Each class has two trained teachers; one as the main teacher and other as the teaching partner. There were 5 special needs students in the Station Rotation Model class. 12 students were above average and 13 were average learners based on their previous academic performances. The traditional model class has 4 special needs students. There were 10 above average students and 16 average ones.

The class with Station Rotation was divided into four groups according to their range of learning. They were given names of different flowers. The students with special needs formed the Lily group, the brightest of them formed the Rose group, and the average ones were divided into Jasmine and Tulip. The stations were divided into: (1). The online station (2).The teacher’s station and (3). The Worksheet and activity Station. English, Math, Second language, Social science and Science are the curricular subjects taught. 3 periods are done in the Rotation method for English, Math and Malayalam in a week. Each stations get 20 minutes in a 60 minute period. This is done using a special bell to remind them of time lapse . On other days they have the regular 45 minutes 8 period pattern. During days of station rotation they have a total of 6 periods of 1 hour duration in a day. The Control group follows the regular 45 minute 8 period pattern.

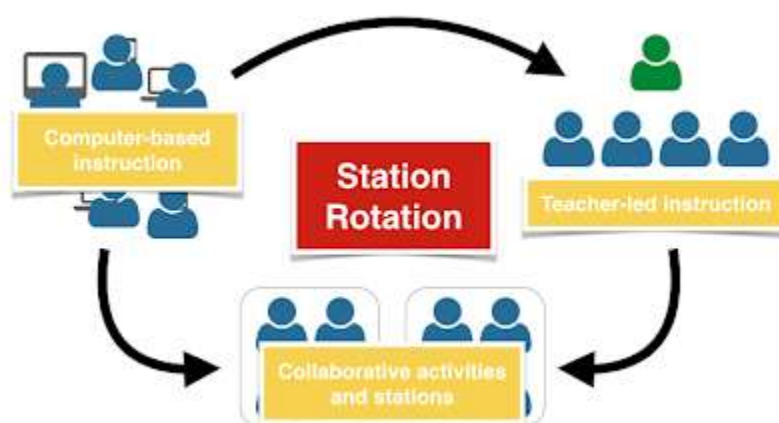


Figure 1: Station Rotation Model

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The experimental pattern is as follows:

Common instructions on chapters and topics are followed after assigning students to groups. A bell to announce start of first 20 minute session is given and the main teacher starts to teach the group at her station. The other two groups are monitored by the teaching partner as she moves around. The online group has video of the lesson to be learnt and at the end of it has some small activity to do on the basis of what they saw. Five laptops are provided and the videos and activities are pre loaded by the teacher. The students use it themselves with supervision only when necessary. The Activity group does the worksheets and also activities like cutting- pasting, colouring etc based on the lesson plan. The special needs group will be the ones whom the teacher caters first in the rotation. Each group gets every station thus in the 20 minute phase with the bell separating each session. The grades obtained by students were converted to points as given below **A-5, B-4, C-3, D-2, E-1**.

The results were statistically analysed, t test was used to compare the performances of both the groups.

RESULTS

Table 1 shows the result of t test comparing the experimental and control groups on tests performance in different subjects. From the result it can be seen that the experimental group differ statistically (1%level) on English reading and Math test. The experimental group is seen to perform significantly better than the control group. The same result is seen for English and Malayalam Conversation test (significant at 5 % level)

Table 1 Comparison between groups on performance in different subjects

Variables	group	N	Mean	Std. Deviation	t
English Reading	1	30	3.43	1.431	3.044**
	2	30	4.33	.758	
Conversation	1	30	4.00	.947	2.347*
	2	30	4.50	.682	
Writing	1	30	3.83	1.117	1.486
	2	30	4.20	.761	
Malayalam Reading	1	30	3.77	1.223	1.949
	2	30	4.27	.691	
Conversation	1	30	3.83	1.053	2.291*
	2	30	4.37	.718	
Writing	1	30	3.63	1.189	1.051
	2	30	3.93	1.015	
Math	1	30	3.83	1.262	2.169**
	2	30	4.40	.675	

** denotes 1% level of significance, * denotes 5% level of significance

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Table 2 shows comparative analysis of experimental and control groups on performance in term one. Table 3 shows the grades obtained by the total number of students in both groups in English and Malayalam test. Table 4 shows their results on Math

Table 2 Comparative Analysis of 1 Term progress

Subject/Topic	Experimental Group	Control Group
English- Myself Unit 1,2,3	All 30 completed worksheets and done all activities of first chapter.	8 students have left their worksheets incomplete as they could not follow the topic well.
Mathematics –Unit 1,2,3	All 30 completed worksheets.	10 students left incomplete worksheet
Malayalam- Chapter 1-5	23 students completed the worksheets	15 students only partially completed the worksheet
EVS- Unit 1,2,3	All 30 completed worksheets as well as other activities.	4 students yet to complete worksheets fully.

Table 3 Grades obtained and the number of students in English and Malayalam test

Criteria	English				Malayalam			
	Experimental		Control		Experimental		Control	
	Grade	No. of Students	Grade	No. of Students	Grade	No. of Students	Grade	No. of Students
Reading (Reading aloud Fluency Comprehension)	A	15	A	10	A	12	A	10
	B	10	B	9	B	14	B	10
	C	5	C	4	C	4	C	5
	D	0	D	7	D	0	D	5
	E	0	E	0	E	0	E	0
Conversation (Fluency Recitation Turn- taking)	A	18	A	10	A	15	A	10
	B	9	B	13	B	10	B	9
	C	3	C	4	C	5	C	7
	D	0	D	3	D	0	D	4
	E	0	E	0	E	0	E	0
Writing (Handwriting Spelling Creativity Grammar and Vocabulary)	A	12	A	10	A	10	A	8
	B	12	B	10	B	12	B	10
	C	6	C	6	C	4	C	7
	D	0	D	3	D	4	D	3
	E	0	E	1	E	0	E	2

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Table 4 Comparative analysis of progress in Term 1 Test- Mathematics

Criteria	Experimental Group		Control Group	
	Grade	No. of Students	Grade	No. of Student
Mathematics (Conceptual Understanding Activity Tables Mental Ability)		15	A	12
	A	2		
	B	3	B	8
	C	0		5
	D	0	C	3
	E			2

Legend: A- Excellent B- Very Good C- Good D- Below average E- Needs improvement

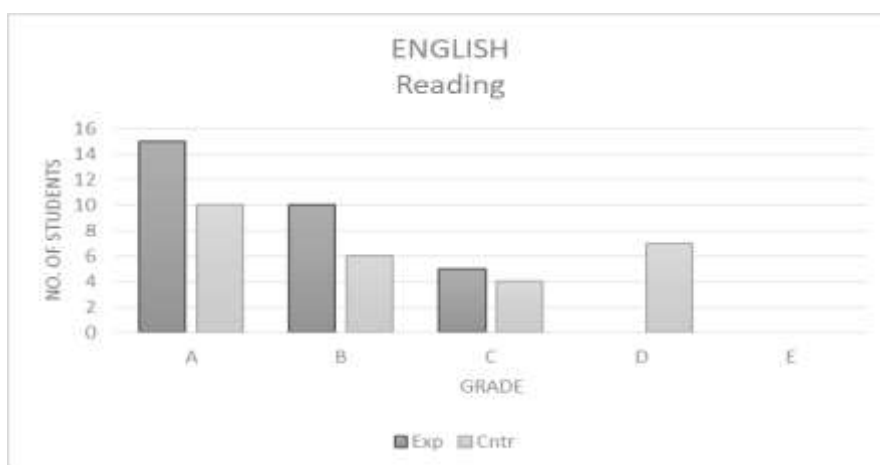


Figure 2 Number of students scoring A, B, C, and D & E Grades for Term- 1: test in English Reading in experimental and control groups.

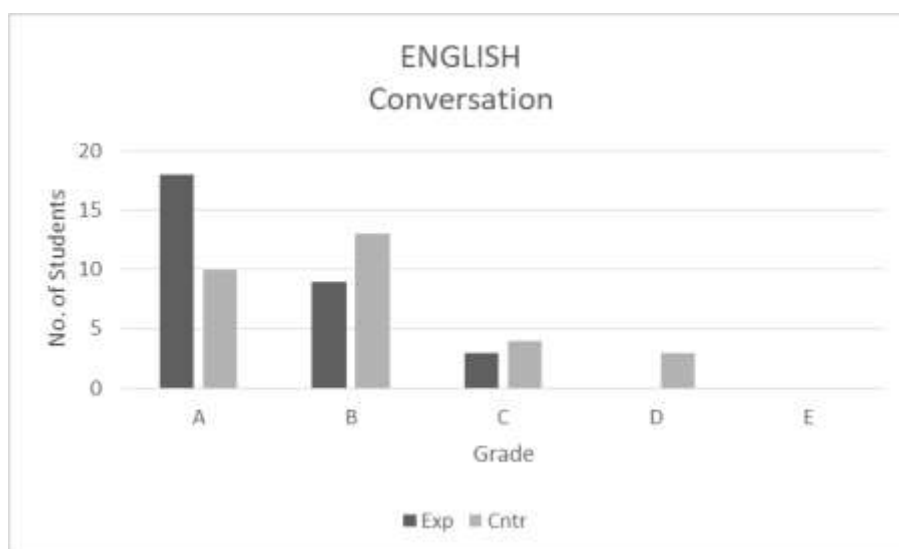


Figure 3 Number of students scoring A, B, C, D & E Grades for Term -1: Test in English conversation in experimental and control groups.

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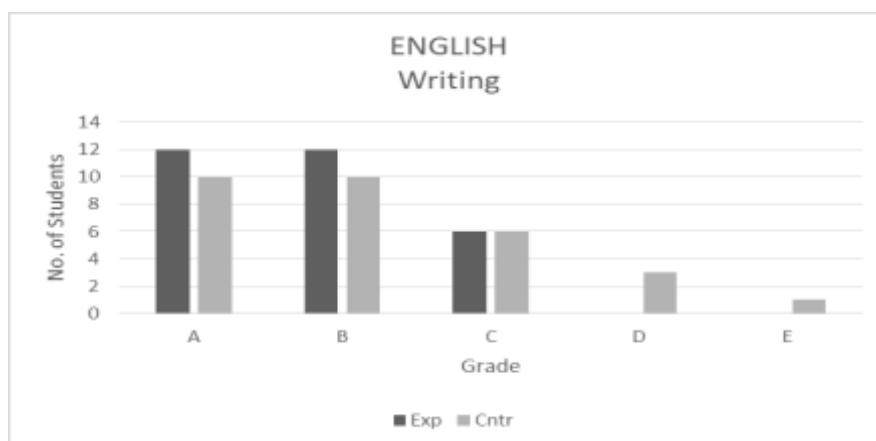


Figure 4 Number of students scoring A, B, C, and D & E Grades for Term -1: Test in English writing in experimental and control groups.

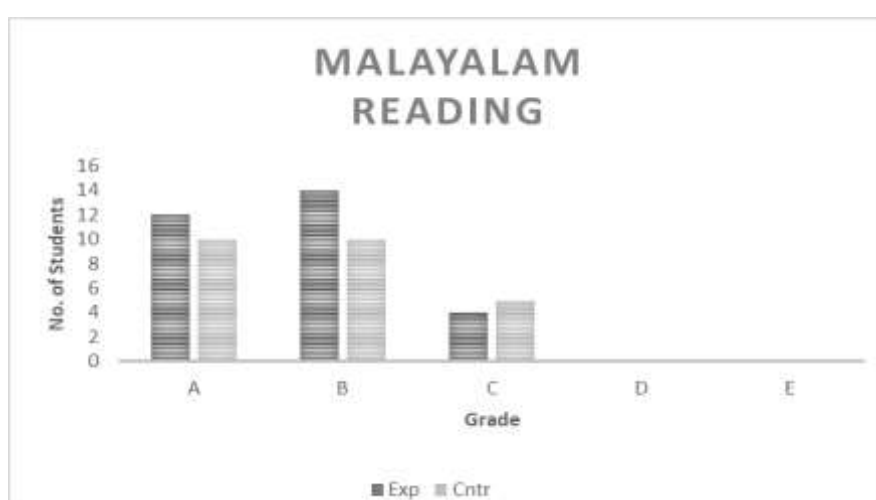


Figure 5 Number of students scoring A, B, C, D & E Grades for Term -1: Test in Malayalam reading in experimental and control groups.

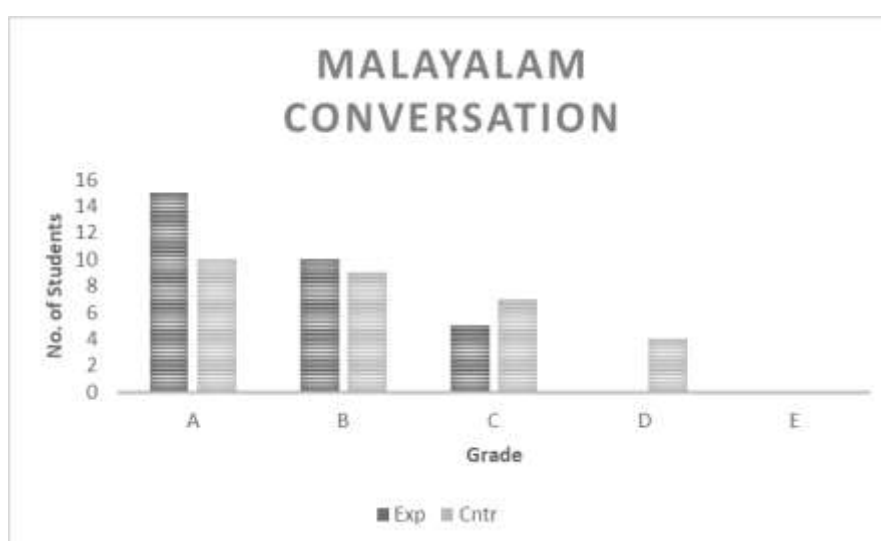


Figure 6 Number of students scoring A, B, C, and D & E Grades for Term- 1: Test in Malayalam Conversation in experimental and control groups.

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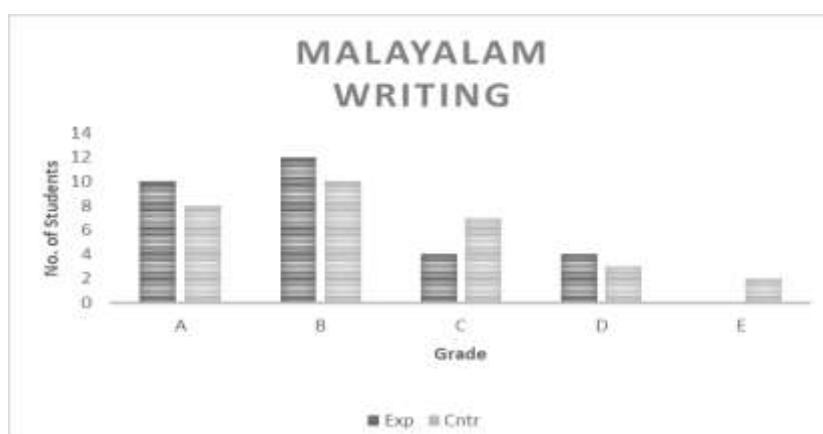


Figure 7 Number of students scoring A, B, C, and D & E Grades for Term -1: Test in Malayalam writing in experimental and control groups.

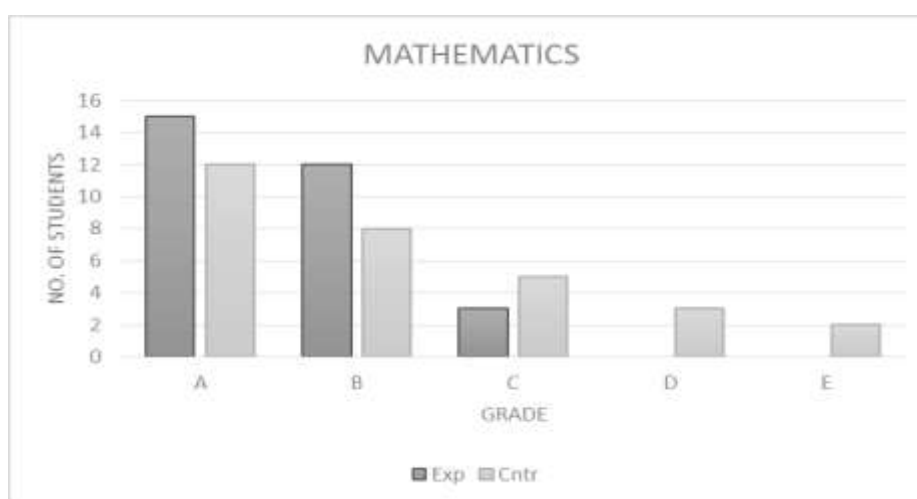


Figure 8 Number of students scoring A, B, C, and D & E Grades for Term-1: Test in Mathematics in experimental and control groups.

Table 5 Teachers Review Report

Observed variables	Experimental Group	Control Group
Attention	Almost all the students paid attention and could answer questions asked.	Only the brighter ones could answer all the questions, the average learners could answer few but the weaker ones drifted off and did not respond at all.
Interaction	All the students asked questions and cleared doubts at the teacher's station and also sought guidelines at the other two stations.	Only the brighter students asked and cleared doubts, others were passive learners.
Interest	Each and every child seemed very interested and looked forward to coming to school with new findings to talk in class. They attained autonomy of sorts as they did work independently.	An apparent lack of interest was noted in the students with special needs as they could not catch up with the others. They were easily distracted most of the time and had to be frequently called out.

DISCUSSION

Significant levels of improvement in English Reading, Conversation and Maths in the experimental group under the station rotation model can be considered as the benefit of this model for not just students with learning problem but to the entire students as well. The characteristics of this model could be seen as the contributing factor. The fact all students receive individual attention from the teacher and that at each table they are provided with various learning facility would make the learning process interesting, challenging and fun for students. Similar finding have been reported by Anthony G.Picciano, Charles D.Dziuban and Charles Graham 2012 in their book Blended Learning Research Perspectives Volume 2.

In the Writing area however significant changes are not noted mainly as writing requires a higher level of learning and hence more practice will be needed for students to attain mastery. The grading is done as per CBSE i* criteria and rubrics of Period Test grading, the assessment is taken after one term, there are three terms in a year and higher levels in writing will be attained after two more terms. The significant changes in English and Malayalam reading and conversation areas prove that the Station rotation Blended Learning is more effective compared to the traditional classroom approach.

An objective and subjective analysis was also done comparing the review reports of the teachers in both the classes. The teachers in the experimental classroom reported more positive experiences in all the subjective areas reviewed like Attention, Interest and Interaction which are vital to learning. The teachers in the experimental group reported more satisfaction to see the students becoming independent learners. Students seemed to enjoy coming to school more than before, they showed more confidence to work in their groups and do presentations. Autonomy was clearly achieved in the experimental groups as students started to take initiatives in learning without being asked to. The computer station is a productive learning platform and can be done offline as well by pre loading videos and study materials by the teacher. Through these kinds of tech-based activities

Students have opportunities to work independently and privately, free from concerns about how they will perform in front of their peers.

**CBSE i is the international syllabus of the CBSE board.*

CONCLUSION

The results of the study prove that a shift in teaching methodology makes it possible for learners of all kind to to come up with better learning results. In addition, teachers are able to cater to all kinds of learners within a single classroom. The brighter ones are given enrichment programmes as well when they get to teach their less bright peers after they complete their work. The weaker ones benefit a lot as they get the undivided attention on a one to one basis from the teacher at a point when others are engaged in independent work. This practice can be successfully implemented in every school with inclusive practices and schools that wish to include all kinds of learners in future.

Limitations of the study

This was a comparative analysis done on two classes for only one term and the areas of writing in English and Malayalam showed scope for improvement and less significant changes when compared to English and Malayalam reading, conversation and Mathematics which showed significant improvement.

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Conflict of Interest

The author declared no conflict of interests.

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