New Methodology to Differentiate Instructional Strategies for ESL Learners in the Indian Context

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Abstract—Many students struggle with reading when whole group instruction forms the core of the reading program. This is especially true when teaching second language students. The proposed intervention methodology combines multiple proven methods to improve reading skills in students. The study focused on using differentiated instruction and multiple assessments such as Informal Reading Inventory (IRI), Qualitative Spelling Inventory (QSI), Running Records, Dynamic Indicators of Basic Early Literacy Skills (DIBELS), High-frequency words and phonological awareness. After the usage of the said tools, students learnt to follow a firm reading routine, respect classroom procedures, work in teams and solve problems independently. This five-month study examined the benefits of the differentiated instruction with thirty six 5th grade students, who were the second language English learners in a school in the state of Karnataka, India. The key findings from this study indicated that differentiating instruction and using small group instruction assisted and improved students’ reading and writing proficiency. With our proposed method, 94% of the students improved their reading comprehension by a minimum of three grade levels. An unexpected benefit was a positive change in attitude and behavior of the students along with increased confidence.

Keywords— Informal Reading Inventory (IRI), Qualitative Spelling Inventory (QSI), Running Records, Dynamic Indicators of Basic Early Literacy Skills (DIBELS), High-frequency words

I. INTRODUCTION

Teaching English in India as a second language is indeed a challenge. Often teachers are neither proficient in spoken English, nor are they trained in classroom management skills, the skills that teachers require to have in order to manage a large group of multi-leveled students.

To be an effective English teacher for second language learners, Echevarria, Frey, and Fisher state that a teacher has to be aware of four sections - access, climate, expectations and language instruction [1]. The word ‘climate’ here refers to the conditions that are present in classrooms. It is said that the effective teachers create a positive climate in the classrooms using a variety of ways. To say, they show respect and patience towards the students [1]. A widely used adage in educational circles says that the teachers should first examine their own educational practices and make changes when the students are not successful. A change in the teachers will lead to change in the students.

Also, many years of research has shown that a teacher’s expectations directly influence the performances of the students [1]. Therefore, it is important to first state specific instructional objectives to the students before a lesson is being taught. This would provide a framework for the students. Without this framework, it is easy for English language learners to be distracted while the lesson is being taught [1]. Although vocabulary development is a significant part of language acquisition, oral language, grammar, and other literacy skills also play a major part. Teachers use phonemic awareness to help students understand many layers of language acquisition.

Our intervention methodology combined several methods to improve reading skills in students. The students learnt classroom routines, rules, procedures and guidelines for five months, the duration of the entire research. Students practiced the classroom procedures, learnt how to work in teams and solved problems independently.

The various assessments used in this study include an Individual Reading Inventory (IRI), Running Records, Qualitative Spelling Inventory (QSI), High-frequency word list and Dynamic Indicators of Basic Early Literacy Skills (DIBELS). All these practices were new to the participants of the research, including teachers, students, administration and parents. This paper will show how the assessments were administered among students, elevated their reading levels and motivated them to perform better.

II. BACKGROUND

The current educational system encourages students to use rote-learning techniques to memorize the chapters and also to prepare for the examinations. This is a widely accepted method, and teachers instruct students using whole group instruction with a focus on rote memorization. There have been several studies to show that the obsolete practice of rote memorization is inappropriate for many subjects and may not prove beneficial in all the circumstances [2]. In her research, Fata-Hartley [2] pointed out that the rote learning does not induce actual learning in students. Rather, for the actual learning to take place, there should be active engagement from the part of the students.
In another research, Vygotsky and Bruner too encourage students to acquire knowledge through active participation. The backbone of the curriculum in US schools is Vygotsky’s Zone of Proximal Development, popularly known as ZPD. The ZPD concept states that the students can learn to do independent works when an adult or a more competent peer assists them [3]. A teacher or an educator can recognize a child’s ZPD, the area between what a child can do by himself and where the child will require assistance, through his/her watchful eyes or by testing through asking questions, and by determining a student’s individual learning techniques.

In addition, it is important to provide a calm classroom atmosphere for the effective learning to take place. Good classroom management strategies can provide this effective learning environment for students. Calm environment in classrooms proves productive because it enables the teachers to take a proactive approach to classroom misbehaviors, a key factor in good classroom management. Behavioral learning theories state that the misbehaviors persist over time if maintained by some ‘reinforcer’ such as a teacher or a peer group, or by both [4]. Therefore, it is necessary to identify the ‘reinforcers’ to reduce the misbehaviors. Praise is usually a powerful motivator for many students to reduce misbehaviors. That is, to appreciate students when doing the right things. To say, if students often move away from their seats without permission, praising them when they sit back and get to work can reduce this misbehavior.

III. METHODOLOGY

A. Assessments used in the Method

The research applied a set of assessments to align students to their correct grade level. They were as follows:

- The QSI put the students in the preliminary reading group.
- The IRI assessed reading comprehension level of students.
- The Running Records checked if the words the students read were correctly/incorrectly pronounced.
- The DIBELS assessed each student’s reading fluency.
- The High-frequency words list tested students at three separate junctures of the research - at the beginning, mid-level and post research.

Qualitative Spelling Inventory (QSI), a similar method like spelling test, also considered to be the baseline or pre-assessment test was first initiated for the assessment. The QSI assessment consisted of a list of 25 words, where each word represented different spelling patterns that were progressively more difficult. Among the several levels of inventories, primary, elementary and upper level that exists for QSI, this research undertook an Elementary Spelling Inventory (ESI) for students as they belong to elementary school. Subsequently, each student was administered with a bi-monthly test, a method to examine their mastery of the studied attributes of the words.

Conducting such tests helped our researchers to examine the retention capability of students, which in turn helped gear instruction. Thus, using the original QSI that each child had done at the beginning of the study (in October 2014), the researchers conducted mini-lessons and taught students several word sorting games which in turn helped them understand word patterns.

Mini-lessons

The researchers spent five to fifteen minutes teaching mini-lessons on various topics such as reading comprehension strategies, English grammar or other text-related factors. Sometimes mini-lessons were taught to the whole class, and at other times the students were taught in small groups. In our research, we used mini-lessons to correct grammatical errors that students consistently made in their writing. We also conducted mini-lessons, when we felt the students needed extra help to comprehend a reading lesson we had taught. We used questioning strategies to help the students. For example, we started the lesson by talking about why people ask questions. Then, we used this strategy to ask them questions about the stories that they were reading about. We made a list of questions, then evaluated the questions, choosing the ones that focused on the big ideas that helped students understand the story better. [16].

A. Quantitative Spelling Inventory

The QSI test enabled the placement of students into four reading groups and revealed the spelling deficiencies of each student. Students generally moved on a continuum through the various spelling stages, namely; Emergent, Letter-Name, Within-Word, Syllables and Affixes, and Derivational Relations Spelling [7]. This research ceased at the Syllables and Affixes stage and administered the inventory, resulting in four reading groups.

The intervention for each reading group was varied. For example, the Within-Word Spelling group differentiated between short vowel and long vowel words, as it was their area of deficiency. The group required training on short and long vowels, hence, a few rules to differentiate between cute, hat-hate, slid-slide etc. were taught to the students. While teaching, students were initially made to pronounce the words in the list, following which several word sorts were used to teach the concepts. The students were also made to write down the words in their spelling notebooks. Word sorts are word study to assist students to focus on conceptual and phonological features of words and to identify recurring patterns they possess. For example, students sort words (written on cards) such as stopping, bugging, and running they discovered the rule for doubling the final consonant in short vowel words before adding the ing at the end of the word. [15].

The whole class was also deficient about the concept of blends, digraphs, and diphthongs. Blends are two or more consonants, when combined together makes a single sound. (for example br, cl, sp, etc.). Diagraphs are two or more consonants combined together make a single sound. (for example ch, sh, etc). Lastly, diphthongs which are two vowels when combined make a certain sound and the sound of neither
vowel is heard. (for example oi as in foil etc). [7]. They also required training to sort the words into categories. Such trainings were provided. Vowel patterns were taught using ‘word sorting’, a process of separating a group of words into piles with similar features. For example, we taught them to sort pictures using the same beginning consonant sounds or medial vowel sounds. This format of teaching was followed for the entire class for the entire duration of the research.

Assessments have become a necessity in the 21st century classrooms. The present education system analyzes the achievement level of students through annual tests, administered by school districts and federal education agencies. To better this system, a number of teachers use Quantitative Spelling Inventory (QSI), published in the book ‘Words Their Way: Word Study for Phonics, Vocabulary and Spelling Instruction’ (Bear et. al., 2008). The legitimacy and dependability of this spelling inventory are indisputable. Also, they are easy and quick to administer in any classroom environment.

There are several different levels of the spelling inventory, Primary, Elementary and Upper Spelling Inventories. This research has used Elementary Spelling Inventory (ESI) which is specifically used for elementary school grades from 1st to 6th grade. Generally, there exists co-relation between the spelling test score and standardized reading scores (Bear, et. al., 2008). Thus, from the researchers’ past and the current experience, when students attempt and achieve a high score at this spelling inventory, they are also counted as good readers.

In conclusion, using the Guttman Scalogram analysis, it had been noted that the coefficient of reproducibility had an average of 0.91 (Bear, 1982, 1992).

A. Running Records and Informal Reading Inventory

Running Records and IRIs are primarily used to document the development of the students with suitable academic (leveled) reading material. Running Records enable the teachers to analyze the oral reading skill of the students. It would also help to understand their ability to solve reading problems.

During this research, Running Records were collected at three different periods:

1) Prior to beginning the research to get a baseline score
2) At the mid-point of the research (November 2014)
3) At the end of the research (February 2015)

The book used for narrative reading is Flynt & Cooter’s Reading Inventory for the Classroom (RIC). Alongside, reading inventory was also administered. The below methodology is used to implement the Running Records and IRI on the same day to the student:

Initially, the Running Record was introduced to each student. They were then tested for their oral reading competency right outside their classroom. The duration of these tests (running records and IRIs) took the researchers approximately 15-20 minutes per child. The students read aloud a narrative passage to the researchers, during which, the running records were documented. Documentation involved penning down the words that the students read correctly and the type of errors they made while they read. Students repeated the read passage as the next step.

The assessment of comprehension was also taken by asking students questions from the reading. Comprehension is measured by the student’s ability to recap the passage they read and to answer questions about the passage. The questions were both evaluative and inferential, to examine student’s ability to use literal and higher level thinking. They also tested their knowledge of vocabulary. The IRI chose for the purpose was Reading Inventory for the Classroom (RIC), written by Flynt and Cooter. The book was chosen as it contains a miscue analysis grid for each passage and focuses on vocabulary building.

IRI and Running Records diagnose various difficulties students face in word identification, fluency and comprehension [8]. They help students with higher-level thinking like synthesis, evaluation and analysis. For enhancement of comprehension of higher-level concepts, graphic organizers were also used. Constructivists like Vygotsky and Bruner has advocated this type of learning environment. To better this system, a number of teachers use Running Records and IRIs are primarily used to document the development of the students with suitable academic (leveled) reading material. Running Records enable the teachers to analyze the oral reading skill of the students. It would also help to understand their ability to solve reading problems.

B. Dynamic Indicators of Basic Early Literacy Skills

DIBELS is another tool that is used to evaluate the students’ reading fluency and provides oral passages that measure the reading speed for each grade level. Usually this test is individually administered to each student. However, we administered the test in small groups. For the first 10 days, the test was supervised once in a day, thereafter, once in a week until the 8th week. As the days passed, a better motivation to perform well was seen among the students. They also showed an improved competition with each other and compared each other’s scores on a regular basis.

C. High-frequency Words

High-frequency words are the words that are most frequently used in the English language. Example: ‘who’, ‘and’ or ‘the’. School districts across the US require students to study high-frequency words for each grade level. Thus, students in the US have to know 500-600 words by the time they are in 5th grade. Many of these words are difficult for non-English speakers to learn because they are not easily decodable, i.e., difficult to extract the true meaning of the word [8]. The other complicating factor is that these words do not individually carry any meaning. So, for example, it is easier to explain what a ‘spider’ is, rather than words such as ‘what’ and ‘how’.

D. Phonological Awareness

Early phonological awareness helps a student understand the structure of spoken language, that it consists of sentences and that those sentences are further made up of individual sounds called phonemic awareness. Acquiring this
phonological awareness is important because it later builds the foundation for success in phonics and spelling [11]. We showed students how to ‘chunk’ words. We started teaching students this concept by explaining the common features that words have. For instance, by adding a consonant ‘h’ or ‘m’ to long vowel words that end in ‘ike’, or short vowel words that end in ‘en’, we arrive at words such as ‘hike’ and ‘mike’ or ‘hen’ and ‘men’ respectively.

IV. STRATEGIES

The first author taught the students various strategies during the entire duration of the research. These strategies worked well in the study and the students made great progress.

In the beginning of the research, the lessons included scaffolds, giving the students the structure that they were used to. Currently, the teachers structure their classroom using whole group instruction. Therefore, at the beginning, the whole group instruction was maintained and eased the students slowly into small group instruction before commencing differentiated instruction in the class. This process took over seven weeks. Rigorous and firm classroom rules were implemented in order to achieve the necessary structure. This structure was the backbone of the classroom, hence, the rules were firmly followed and the students accepted the consequences that were set in place at the beginning of the research.

Implementation of classroom jobs was another factor that contributed towards daily and weekly form of positive reinforcement. For instance, only students who listened, and adhered to our classroom rules, and were who exhibited on task behavior, were assigned weekly jobs. They were taught clearly that this is the scenario in the real world, where only people who work hard and do their jobs properly are able to maintain their jobs. During the early part of our research, as a move to teach students on framing questions, we structured questions that students might ask and modeled various questions for them. As the weeks passed, the students themselves began generating the questions [12]. This was one among the many scaffolding strategies taught to the students.

Also, every time a book was read or taught a lesson, we stopped and thought out aloud. In his studies, Wilhelm [13] have shown that teachers who follow this routine, make children aware of the thinking style of capable readers and the way they process the information read. This approach motivated the students to ask more questions, thereby, encouraging more learning. According to educational psychologists, there are two different types of motivation — intrinsic and extrinsic. Intrinsically motivated are those activities people perform, and find fulfillment and joy from the activities itself. They require no external encouragement. Extrinsic motivations demand external rewards, by praise, prizes, grades, recognition et cetera. We used both types of motivations and the students thrived with the attention, praise and other academic rewards such as better grades during the research study.

V. THE STUDY

A. Participants

Our study was done with 36 fifth grade students over a period of five months.

The study offered supplementary English language classroom instruction to Kannada (language spoken in the state of Karnataka in India) speaking students, many of whom had low reading comprehension and vocabulary levels.

Of the 36 students selected to participate in the study, 21 were male (58%) and 15 were female (42%) students.

B. Procedure

The study was divided into three phases — pre-testing, mid-level and post-testing. The methods used to test the students’ knowledge are detailed below:

During pre-testing (or testing prior to actually beginning the study), the researchers gave the students a list of over 480 words. The parameters of fluency, accuracy, and the speed with which the students were able to pronounce each word on this list were tested. In the beginning of the study, during October 2014, each student was tested for fifteen to twenty minutes in order to get a baseline score. This process took three days of testing for all the students. This method was again repeated in November 2014 to obtain a mid-point reading score and then again in February 2015 to obtain the final score. Based on the results obtained, the class was divided into four reading groups.

During the mid-level testing, in addition to the method used during the pre-testing, the list of words was included as a game that the students could play during their literacy rotation time. The students were allowed to practice the list of high-frequency words at home. As the weeks went by, researchers coached the students on gaining automaticity, accuracy and speed. This in turn, improved the students’ reading comprehension. The children looked forward to the reading classes and waited anxiously for the lessons we had planned. They were required to work within their assigned reading groups for 20 minutes each day for the duration of the study. Using leveled books, they were tested for ‘reading fluency’ and were taught phonological awareness and comprehension skills. In school, children are taught to pronounce the speech sounds in English. As they learn to pronounce these sounds, they learn to talk and they also learn to associate these sounds with letters as they learn to read and write [9]. As stated earlier in this paper, the phonological system is important for both reading and writing.

The post-testing was conducted in the same manner as the pre-testing. The test enabled us to analyze the students reading comprehension skills after completing the previous two levels. Responses of the students reading comprehension score were statistically analyzed using the SPSS software and R.

C. Results

We conducted a repeated measure ANOVA to analyze the improvement in the reading comprehension skills of the students learning, which was tested within the duration of five
months. Table 1 shows the means and standard deviations (SD) for improvement in reading comprehension.

**TABLE I. DESCRIPTIVE STATISTICS**

<table>
<thead>
<tr>
<th>Time points</th>
<th>mean</th>
<th>sd</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>2.17</td>
<td>1.73</td>
<td>36</td>
</tr>
<tr>
<td>Mid-Test</td>
<td>4.92</td>
<td>2.39</td>
<td>36</td>
</tr>
<tr>
<td>Post-Test</td>
<td>6.44</td>
<td>1.97</td>
<td>36</td>
</tr>
</tbody>
</table>

Table 2 shows the overall significant difference between the means at different time points. A repeated measures ANOVA done with a Greenhouse-Geisser correction determined that mean, reading comprehension score differed significantly between the time points (F(1.92, 67.11) = 143.866, P < 0.05). The results presented in table 2 show an overall significant difference in the mean score.

**TABLE II. TESTS OF WITHIN-SUBJECTS EFFECTS**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Greenhouse-Geisser</td>
<td>1.92</td>
<td>143.86</td>
<td>.000</td>
</tr>
<tr>
<td>Error (Time)</td>
<td>Greenhouse-Geisser</td>
<td>67.11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The table 3 presents the results of the Bonferroni post hoc test, which allows us to discover which specific means differed.

**TABLE III. PAIR-WISE COMPARISONS TABLE**

<table>
<thead>
<tr>
<th>(I) Time</th>
<th>(J) Time</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>Mid-Test</td>
<td>-2.750*</td>
<td>.277</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Post-Test</td>
<td>-4.278*</td>
<td>.231</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Pre-Test</td>
<td>2.750*</td>
<td>.277</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Post-Test</td>
<td>-1.528*</td>
<td>.257</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Pre-Test</td>
<td>4.278*</td>
<td>.231</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Mid-Test</td>
<td>1.528*</td>
<td>.257</td>
<td>.000</td>
</tr>
</tbody>
</table>

Post hoc tests using the Bonferroni correction revealed a significant improvement from pre-test to mid-test (P<0.05) and between mid-test to post-test (p<0.05). The post-test score showed a remarkable improvement in reading comprehension skills among the students. Specifically, the results suggest that the integrated method implemented elicits a statistically significant improvement in reading comprehension.

Fig. 1 shows the estimated marginal means of students’ reading comprehension score over a period of time. Before conducting the treatment, the students’ mean score was lower. Their mean score improved significantly after the students followed the learning process in the mid-test. This progress continued until the post-test, subsequently the students’ means score increased.

**Fig. 1. Estimated marginal mean of student’s reading comprehension score**

### VI. DISCUSSION

The assessments were a huge motivational factor and encouraged all the students towards higher achievement levels. Perhaps due to cultural factors, none of the students in the study wanted to be associated with the lower reading group. This motivated the children. The other factor that played into students’ motivation was classroom rules and consequences.

With our proposed method of Differentiated Instruction, students increased their grade levels by an average of 4.3. In the initial measurement, 86% of the 5th grade students were reading below grade level. At the end of five month, all the students in the research study had improved his/her reading level by at least three grade levels. There were many factors that played into the success of this research however a large portion was due to the motivation of each student. 66.6% of the students were assessed at Grade 6 or above and 16.6% at a 9th Grade level in the final measurement.

The final result of the high-frequency word tests revealed that the new methodologies used influenced the students positively, though on an average, the overall increase in percentage was only 1.6%. These small increases of high-frequency words had a big influence on reading comprehension with most of the large increases coming from students who tested initially at Grade 0, 1, or 2 levels.

The fluency test (DIBELS) not only motivated students, but also increased their fluency scores where 66% of the students doubled their reading fluency score. It was seen that overall, the class scores increased by 2.1 grade levels in five months. At the beginning of the test, only 14% of the class was at grade level 5 or higher, but at the end of the five months, 75% of the class was at least at grade level 5. Note that it is possible that the grade levels attained were higher, but the researchers only had reading fluency measurements up to 6th grade level.
On average, 94.4% of the students in our study improved their reading comprehension by a minimum of three grade levels or more. We found that the mistakes the Indian students made differed greatly from the mistakes made by students of the same age in the U.S.A. For example, the Indian children had a difficult time understanding prepositions and prepositional phrases. We implemented a much more rigorous classroom management system than the existing one, supplemented existing text books with leveled books, taught grammar in context using mini-lessons and worked on common errors to help improve learning English as a second language.

Generally, reading and writing go hand-in-hand and this was also the case in this research. In the research, a writing rubric was implemented and we were able to perform the initial baseline and the mid-level (7 weeks) reading. However, the final reading could not be collected due to time constraints in the study. The mid-level readings after just seven weeks showed an average overall improvement of 45 percent, an impressive overall result.

VII. CONCLUSION

To sum up the research:

- 94% of the students improved their reading comprehension by three grade levels or more.
- 80% of the students in the research improved in the high-frequency knowledge and automaticity by an average of 1.6%.
- The reading fluency of students scoring 5th grade or higher was improved from 25% to 75% by the end of five months.
- The writing skills of students improved by 45% in seven weeks.

To explain our research metaphorically, just as the electricity charges an electric fan and rotates its blades, the assessments and classroom rules stimulated the various reading groups in the classroom. The assessments, classroom rules and consequences energized the students in the class, encouraging them to learn, enhancing their enthusiasm. The students moved into higher reading groups as the weeks passed, and they engaged with their own learning at their own developmental level. Individual conferences permitted us to outline expectations to the students.

At the end of the study, parent-teacher conferences were conducted. Majority of parents commented that there is an overall improvement for their children in both reading comprehension and fluency. Besides, they stated that there is an improvement in children’s social behavior. In short, they were very pleased with the outcome of the research.

When considering the scenarios of Indian students, it has to be noted that they do not practice spoken English in the universities. Many of these students hail from rural backgrounds, where English is hardly spoken and considered a novelty. Consequently, these students are accepted into university, where the language of communication (both written and spoken) are in English. Naturally, they will encounter a difficulty in understanding their professors and the text books.

However, if IRIs and QSIs were administered on a regular basis to each incoming student, it would remove students’ difficulty in dealing with English language. Perhaps, students who fail at the university level may actually be failing due to their lack of skills in English language.

These key findings from this study, thus conclude that the differentiating instruction and using small group instruction assist and improve students reading and writing proficiency.

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