

## Effectiveness of Literacy and Numeracy Drive at Primary Level in Punjab: A Trend Analysis

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### Abstract

*Study aimed to explore the effectiveness of Literacy and Numeracy Drive (LND) at primary level in Punjab. This study was intended to find out that how successfully “Literacy and Numeracy Dive” playing its role in developing basic skills in the students like reading, writing and understanding information in Punjab. The methodology of this study was designed into two parts to assess the effectiveness of Literacy and Numeracy Drive in district Gujranwala. Firstly, to see the trend in students’ performance data of one year from January 2018 to March 2019 of Punjab district was assessed and collected from the official website of “Literacy and Numeracy Monthly Spot Assessments”. One district Gujranwala was purposefully selected for due to fluctuations in students’ performance based on LND data. For this study, longitudinal trend survey (Gay, 2012) was used to explore the effectiveness of LND in district Gujranwala. In second part of data collection teachers’ perceptions about constructive role of LND were explored. According to School Education Department, there were 1545 males and 2798 female teachers, working at primary level. By using stratified proportionate sampling technique, 10 % primary schools teachers (433) of Gujranwala district were selected. It is evident from data that Literacy and Numeracy drive is successfully implemented in District Punjab. The result of this drive is positive and there was substantial improvement in students’ performance in said time span. Pakistan can achieve targets of SGDs goals if sufficient resources and efficient strategies are applied to eradicate illiteracy at each level (basic and adult). Study recommended that LND drive should be implemented in other provinces as well.*

**Keywords:** Longitudinal study, trend analysis, 3<sup>rd</sup> grade students.

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## **Introduction**

Victorian Curriculum Assessment Authority (2017) has defined literacy as the ability of students to understand, interpret and create texts with accuracy and fluency in and out of school, and to participate in workplace and community. The importance of literacy in today's world hardly is overemphasized due to innovations in technology and information. To engage in education, to reach to potential at robust basis numeracy and literacy is pre-requisite for every child and adult as literacy is basic to all learning (United Nations, Educational, Scientific and Cultural Organization [UNESCO], 2010). Whereas Numeracy is defined as knowledge, behavior, attitude and skills that students require using mathematics in different situations in their daily life (Victoria State Government, 2017).

According to Kirsch (2011), definitions of literacy and numeracy have been transformed over time depending on social, economic and culture values and understandings. History showed that if people are capable of writing their names, they are considered literate. Gradually, people were required to become capable of reading and writing to be considered as literate yet UNESCO documented that literate people must have attended four to five years schooling (Boudard & Jones, 2003). Osberg (2000) asserted that literacy and numeracy measure educational outcome in teaching and learning content.

European Union has divided this literacy and numeracy drive into three categories. These three are called as "baseline, functional and multiple literacies". Baseline literacy is the information of letter, text and words structure and further requires reading and writing of letters. Functional literacy is to perform in society with confidence while multiple literacy is to use writing and reading skills at advance level. Similarly, numeracy can also be divided into three categories as well. Baseline numeracy is that a person has sound knowledge of numbers and basic knowledge of mathematical presentation. Functional numeracy is to use baseline knowledge in everyday use at schools and with others while multiple numeracy is a person's willingness to apply mathematical knowledge in modern society (EU Panorama Skills, 2014).

Acquiring an adequate stage of "Literacy and Numeracy" can significantly develop numerous aspects in one's life. Punjab Education Department (2015) has initiated Literacy and Numeracy Drive to ensure the knowledge and understanding of basic skills in students at primary level. This study aimed to find out how productively "Literacy and Numeracy Dive" playing its role in enhancing basic skills in the students like reading, writing and understanding information at grade III level. Pakistan has to achieve 90% literacy by 2025, enabling Pakistan to achieve SDG 4 Target of 100% literacy rate by 2030 (Education Policy, 2009). School Education Department has involved the "Program Monitoring and Implementation Unit" (PMIU),

to utilize 1100 field officers to visit government schools every month across Punjab. These officers are visiting each district and preparing key monthly assessment result that includes three indicators based upon “Literacy and Numeracy Drive”. Thus, the study aimed to explore the teachers’ perceptions regarding LND drive and evaluate students’ performance based on LND data in Punjab. Furthermore, difference between target and achieved scores in subjects of Urdu, Mathematics and English were also studied.

### *Statement of the Problem*

Andrabi, Das, Khwaja, Vishwanath and Zajonc (2007) prepared Annual report LEAPS (Learning and Educational Achievements in Pakistan Schools) on Pakistani schools regarding LND initiative (2014) taken by Government of the Punjab. They reported that the LND drive is facing substantial challenge that students are not showing improvement in basic concepts of writing, reading and mathematics in their native language. Literacy and Numeracy Drive was introduced at grade III level to administer tablet-based assessment in Punjab. Through this drive 300,000 students are monthly assessed to measure their improvement in basics competencies in Urdu, English and Mathematics.

Attaining a satisfactory level of “Literacy and Numeracy” can significantly enhance students’ performance. Previous basic content and skills related to subjects of Urdu, English and Math (Grades I and II) were targeted as expected learning outcomes for this drive. This study was intended to check that how successfully “Literacy and Numeracy Dive” playing its role in developing basic skills in the students like reading, writing and understanding information at grade III level in Punjab.

### *Objectives of the Study*

The study was conducted with the following objectives:

1. To explore teachers’ perceptions about constructive role of LND at primary level in district Gujranwala;
2. To analyze the trends of students’ performance based on LND data in fundamental concepts of English, Mathematics and Urdu in district Gujranwala;
3. To differentiate the target and achieved scores of LND of Gujranwala with other districts of Punjab in district Gujranwala.

### *Research Questions*

Following research questions were developed for meeting above mentioned objectives:

1. What are the teachers’ perceptions about constructive role of LND at primary level?
2. What is the trend of students’ performance based on LND data in fundamental

- concepts of English, Mathematics and Urdu
3. Is there any difference between target and achieved scores of LND of district Gujranwala with other districts of Punjab?

### **Review of the Related Literature**

“The term literacy should be defined from womb to tomb” (Alexander, 1997). Kirsch (2011), says that literacy have been changed due to social, political, economic and culture values over time. History showed that if people are capable of writing their names, they are considered literate. Gradually, people were required to become capable of reading and writing considered literate yet UNESCO documented that literate people must have attended 4 to 5 years schooling (Boudard & Jones, 2003).

Kennedy et al. (2012) said that at individual level, literacy has different definitions and meanings. And these divided under the domains of cognitive, affective, socio-cultural, creative and aesthetic levels. Each domain has different understanding of this concept. There are three assessment initiatives i.e. “Programme for International Student Assessment (PISA), the Progress in International Reading Literacy Study (PIRLS) and the Programme for International Assessment of Adult Competencies” (PIACC). These initiatives took literacy only for reading purposes. These three programs focus on the process of reading to construct meaning from the text. These programs also emphasis on the significance of literacy to empower individuals (Brunner & Tally, 1999).

Department of Education and Skills (DES) documented literacy and numeracy as a capacity to read, understand and appreciate many forms of communication. It includes spoken and written language (DES, 2011). It showed that term literacy has many facts and multiple literacies (Kress, 2010; Rose & Meyer, 2002). On the other hand, Aistear (NCCA, 2009) defines literacy as the capability to recite and transcribe. It assists children to communicate with others. According to Sulzby and Teale (1991), literacy also means that a child develops his/her own understanding and meaning.

Adult readers can construct meanings from variety of texts by their own (Mullis, Martin, Kennedy & Foy, 2007). These definitions focus on literacy as interactive process of reading comprehension (Ruddell & Unrau, 2004). Literature indicated that PISA and PRILS value the significance of reading comprehension to reflect literacy (Brunner & Tally, 1999).

Literature showed that literacy and numeracy have strong relationship and is a main component of human capital (Shomos, 2010). Numeracy means to communicate while making mathematical sense in everyday application use. It is an ability to explore and hypothesize logically by using different methods to solve problems (Booker et al., 1997). Historical background of literacy shows its three paradigms shifts from behavioristic to cognitive and socio cultural perspectives. In all aspects, first emphasis

is given to reading skill as it is considered and taken from sociolinguistic perspectives. Second, it emphasizes on children's motivation, engagement and self-efficacy. There are other three stages of literacy development with specific components i.e. vocabulary development, word recognition, accuracy, fluency, reading comprehension and writing (Kennedy et al., 2012). According to Leppänen et al. (2008), fluency in reading skill improves reading comprehension while writing skill involves symbolic process arises from independent expression (Kennedy et al., 2012).

Discovering numeracy Hamilton and Barton (2000) asserted that the aim of social and cultural numeracy is to determine an individual's level of literacy. Literacy testing means to answer questions of a test. It is also found that Ethnographic studies determine to examine how people are capable of using literacy and numeracy in daily life.

Literature reveals that parental involvement highlights that early reading under parents' guidance results in many benefits for children as they get assistance from formal literacy instructions. Furthermore, when parents involve in their children's reading habits, it determines language use and improve literacy (Bus, Jzendoorn & Pellegrini, 1995). On the other hand, Mbenzi (1997) argued that learners with low social background face difficulties in reading as compared to higher social background. He further explained that literacy is an ability to read and write in target language for different purposes. It aims to communicate with varied audience. Further, reading and writing is combined with listening and speaking and unfold various literary aspects. In this context, parents should educate their children, motivate them and promote intellectual in their children. It would further lead children to perform better in school (Haveman & Wolfe, 1995).

Literature also indicated that there is a difference between boys' and girls' performance when studying literacy and numeracy in a co-education system. It is found in literature that boys perform better and try to do better in numeracy while girls perform better in literacy and co-educational activities (Gilliganham & Stillman, 1997). On the other hand, many scholars argued that language instruction is an important and prominent teaching approach to teach literacy (Goodman & Ellis, 2005; cited in Kennedy et al., 2012). Research also showed that if children's literacy level is low, it would cause other problems at acquisition level later in life. The low level then further creates difficulties in obtaining educational goals (Ozola, 2008, cited in Kennedy et al., 2012).

A study by Magnuson, Ruhm and Waldfogel (2007) described that children's engagement in literacy and numeracy activities showed positive school results as compared those who are not engaged in literacy activities. Their study also found that pre- kindergarten activities improve reading and mathematical skills. Scheffers' (2005) study found that before the launch of family literacy and numeracy program, Ministry

of Education conducted a survey on one Lower Primary and community program in 13 regions. He said that the survey was conducted due to strong belief i.e. to support parents to help their children. This support would result in literacy competence in order to perform better in schools. The main purpose of this survey in Namibia is to provide support to parents so that they could guide their children for early five years' education.

A study on Reading among grade six learners in Namibia and Norway by Wikan et al. (2007) found that 63% children from low economic background faced difficulties while reading activities as compared to 48% children from higher economic background. PISA 2009 (OECD, 2010; Perkins et al., 2010) indicated that students in Ireland received higher scores on reading literacy than OECD average scores. Napoli and Purpura's (2015) study revealed that relation between numeral knowledge and language is achieved by informal numeracy.

In the above literature, it is noticed that literacy starts from early childhood learning from home where parental involvement assist children to get familiarity with reading comprehension and numeracy. It is also found that several literacy practices are aimed to establish social and cultural practices while school literacy is highly linked with school assessment (Cole, 1996). Kennedy et al. (2012) prove that literacy is not only an individual tool in fact it is fully concerned with a social group to provide multiple literacies for multiple social groups. Gee (2000) is in similar context had proved that literacy is highly a social practice associated with wider social purposes and range. However, Street (2005) asserted that literacy is a unified skill which can be used across cultures. Lastly, it can be said that literacy is a requirement to acquire desired content with reading and writing skills. This paper highlighted that how literacy and numeracy play a constructive role in improving student performance at primary level in Punjab. Moreover with these objectives, the researchers found out that how students performed in fundamental concepts of English, Mathematics and Urdu subjects.

### **Methodology**

The study was designed into two stages.

*First Stage:* To see the trend in students' performance data of one year from January 2018 to March 2019 for grade III students' in Punjab district was collected.

*Second Stage:* One district "Gujranwala" was purposefully selected due to fluctuations in students' performance regarding LND.

### **Research Design**

To measure the effectiveness of LND, longitudinal survey research design was used. This research design is suitable as it helped the researchers to examine the change in responses of population over a specific time period (Gay, 2010).

*Research Method*

For this study a trend survey (Gay, 2012) was used to study the effectiveness of LND in district Gujranwala.

*Sample of the Study*

According to School Education Department, there were 1545 males and 2798 female teachers working at primary level (School Education Department Punjab, 2011). By using stratified proportionate sampling technique, 10% primary schools' strata of male (154) and female teachers (279) from Gujranwala district were selected. Thus total sample selected was 433 teachers. Return rate of questionnaire was 338 (102 male and 236 female respondents).

*Data Collection*

Data regarding target and achieved scores about LND of district Punjab was also taken from the official website of "Literacy and Numeracy Monthly Spot Assessments" ([https://open.punjab.gov. pk/ Ind/ reports/ about us](https://open.punjab.gov.pk/Ind/reports/aboutus)). In second part of data collection teachers' perceptions about constructive role of LND were gathered through self-developed survey.

*Pilot Testing*

For reliability, survey was pilot tested from 30 primary school teachers. The reliability of this instrument was .878 which was comprised of 17 statements. For taking perceptions 5 point Likert scale was used in this instrument.

**Data Analysis**

To explore the teacher perception and to see trends in students' performance SPSS and excel were used.

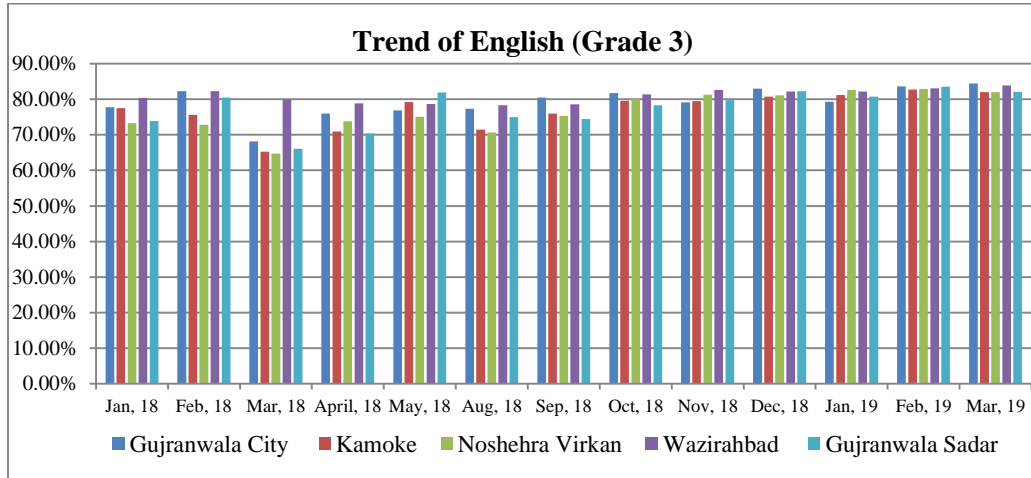
Table 1  
*Descriptive scores on the statements about LND*

	Range	Mean	SD
Do you think due to visits of higher authorities has improved school physical infrastructure, Cleanliness, Students Attendance and Quality Indicators?	4	4.34	.94
Do you think this drive has helped the students to acquire basic "Math's Skills" like recognizing shapes, time, problem solving and handling data?	4	4.21	.84
Do you think this numeracy and literacy drive is effecting positively in the learning process of students?	4	3.97	1.04
Is this drive has made teachers punctual and more responsible for performing their duties?	4	3.89	1.06
Do you think this drive has helped the students to acquire basic "Urdu Language and Writing Skills" like recognizing, reading and writing words independently?	4	3.81	1.16

Do you think this drive has given you directions to keep your performance on the set indicators?	4	3.79	.94
Has this drive played positive role in improving the basic learning outcomes of students of particular class and relevant age group?	4	3.72	1.12
This drive has improved percentage of student's presence?	4	3.71	1.17
Do you think this drive has helped the students to acquire basic "English Language and Writing Skills" like recognizing, reading and writing words independently?	4	3.68	1.14
Is this drive exerting positive influence on teachers and management performance?	4	3.55	1.12
Do you think this drive has helped students to read and write effectively in general?	4	3.55	1.22
Do you think the ongoing numeracy environment through this particular "LND Drive in Govt. Sector" has enabled the students to reason with numbers and other mathematical concepts and to apply these in a range of contexts and to solve a variety of daily life	4	3.52	1.023
Do you think this drive has yielded fruitful results among the students as compared with private sector?	4	3.47	1.23
Is this drive and mechanism of testing through third party carry on in future?	4	3.41	1.21
Do you think the ongoing literacy environment through this particular "LND Drive in Govt. Sector" has enabled the students to gain the skills necessary to participate in the general education curriculum?	4	3.39	1.15
Do you think these indicators and measures have made teacher's job tough?	4	3.10	1.25
Do you think this drive has burdened you?	4	2.99	1.24

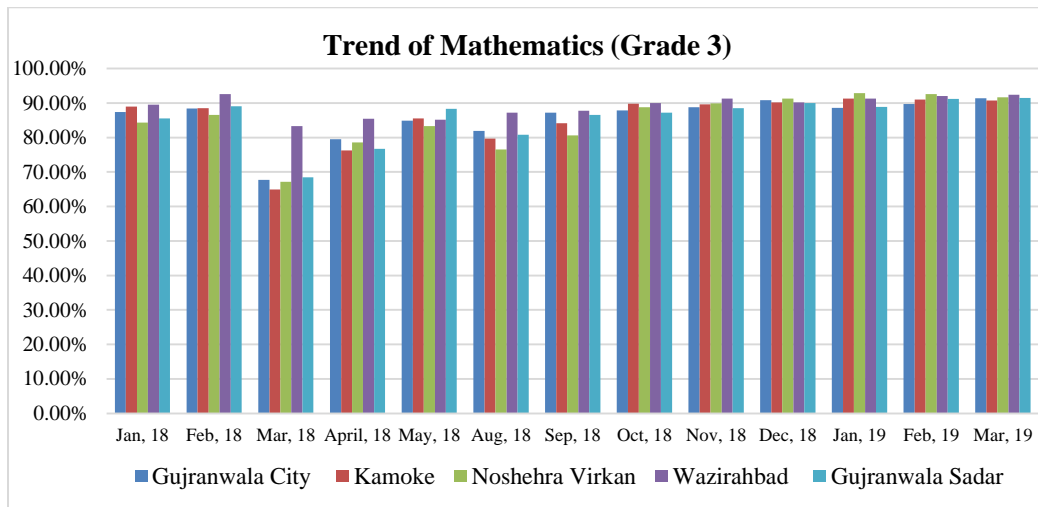
Above table shows the descriptive information about each statement asked from the elementary teachers of Gujranwala. Perception from teachers (338) on above mentioned statements were taken which shows that majority of teachers have agreed on the first two statements that visits of higher authorities has improved school physical infrastructure, Cleanliness, Students Attendance and Quality Indicators and this drive has helped the students to acquire basic "Math's Skills" like recognizing shapes, time, problem solving and handling data. Mean score for these two statements was high as 4.34 and 4.21. Lowest mean score (2.99) was on the statement that this drive has burdened teachers.





**Figure 1.** Performance trend of English subject of grade 3 students in Gujranwala

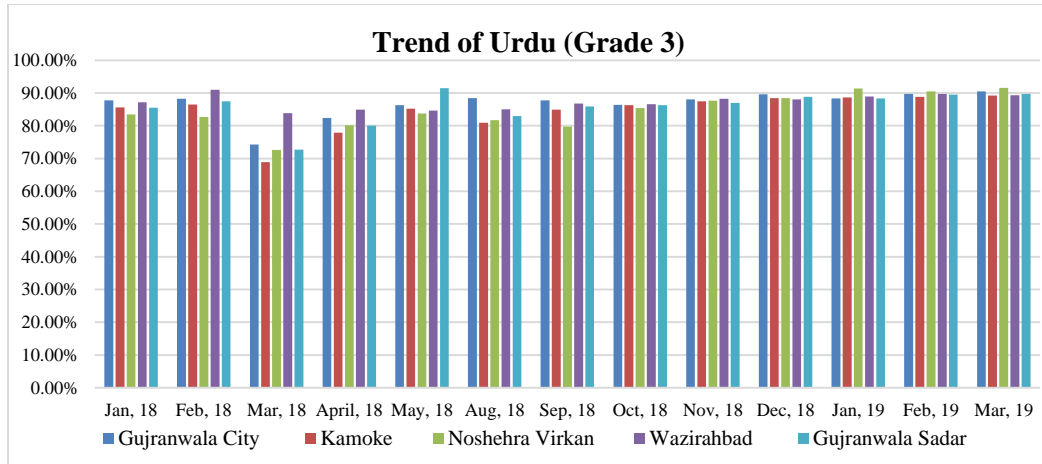
Above chart shows the trend in performance of grade 3 students for English subject in district Gujranwala. Chart shows increase in the scores from 78% to 82% over the year, which indicates improvement in students’ performance in fundamental concepts of English subject.



**Figure 2.** Performance trend of Mathematics subject of grade 3 students in Gujranwala

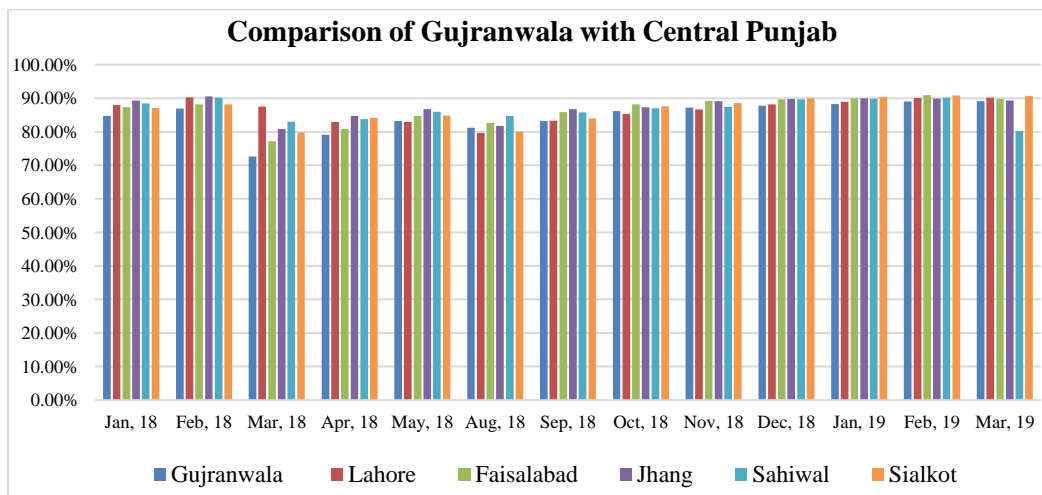
Above chart shows the trend in performance of grade 3 students for Mathematics subject in district Gujranwala. Chart shows increase in the scores from

87% to 91% over the year, which indicates good improvement in students’ performance in fundamental concepts of Mathematics.



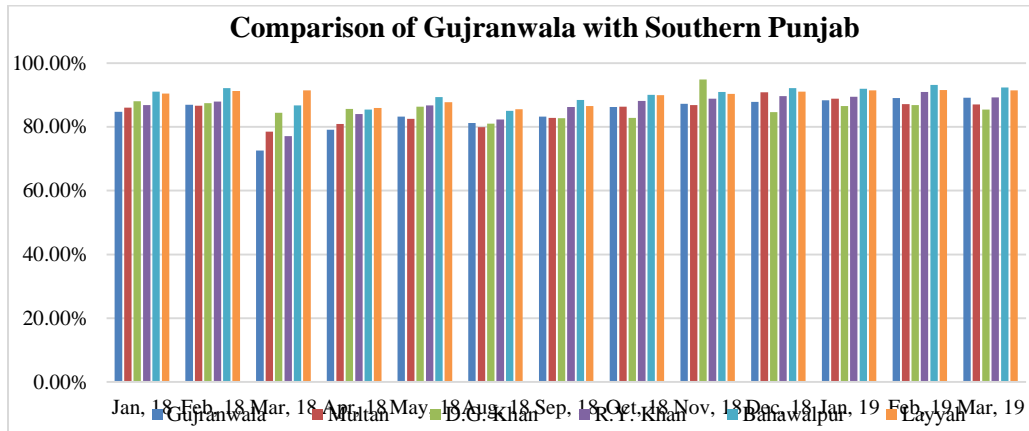
**Figure 3.** Performance trend of Urdu subject of grade 3 students in Gujranwala

Above chart shows the trend in performance of grade 3 students for Urdu subject in district Gujranwala. Chart shows that throughout year performance remained more than 80% with minor decrease in few months. Which depicts good improvement in students’ performance in fundamental concepts of Urdu as compared to English and Mathematics.



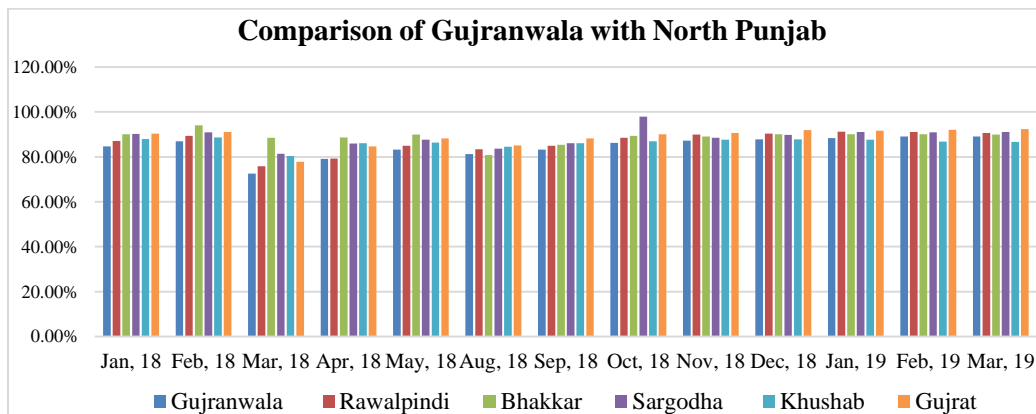
**Figure 4.** Comparison of Gujranwala with Central Punjab based upon LND achieved scores

Above chart shows the comparison of Gujranwala district with Central Punjab based upon LND achieved scores. Target is set to achieve 80% performance in three selected courses i.e., English, Mathematics and Urdu in LND. Data from January, 2018 to March, 2019 depicts gradual increase in performance.



**Figure 5.** Comparison of Gujranwala with Southern Punjab based upon LND achieved scores

Above chart shows the comparison of Gujranwala district with Southern Punjab based upon LND achieved scores. For literacy and numeracy drive target is set to achieve 80% performance in three selected courses i.e., English, Mathematics and Urdu. Data from January, 2018 to March, 2019 depicts increase in performance from the beginning of year till end.



**Figure 6.** Comparison of Gujranwala with North Punjab based upon LND achieved scores

Above chart shows the comparison of Gujranwala district with North Punjab based upon LND achieved scores. For literacy and numeracy drive target is set to achieve 80% performance in three selected subjects i.e., English, Mathematics and Urdu. Data from January, 2018 to March, 2019 shows that overall improvement in every month performance targets were achieved except two districts Gujranwala and Rawalpindi in March 2018.

## **Discussion**

Through the Literacy and Numeracy Drive initiated by PITB, the students across Punjab are being assessed against the learning outcomes of their particular class.

First objective was about the perception of teachers regarding constructive role of LND drive in Punjab. Teachers showed their concern about the difficulty of their jobs ( $M = 3.10$ ,  $SD = 1.25$ ) but they also highlighted positive aspects of this drive as LND makes teachers more responsible towards their duties ( $M = 3.89$ ,  $SD = 1.06$ ), influence positively on management process ( $M = 3.55$ ,  $SD = 1.12$ ). This notion also supported by Osberg (2000) as increasing literacy and numeracy is helpful in measuring the desired educational outcome.

Second objective of the study was to analyze the trends in students' performance based on LND data. Data was accessed through LND website and results of Urdu, English and math subjects were also compared. Data revealed positive changes in scores as shown in charts 1,2&3. Students also showed improvement in fundamental concepts of these subjects. Also, this data is supported by teachers' perception as teachers also responded that students basic concepts and skills in English ( $M = 3.68$ ,  $SD = 1.14$ ), Urdu ( $M = 3.81$ ,  $SD = 1.16$ ) and Math ( $M = 4.21$ ,  $SD = .84$ ) were improved after this drive. Highest improved scores of LND were observed in Urdu (Chart 1) subjects as compared English and Math. These results are also co-relates with the study of Magnuson, Ruhm and Waldfogel (2007) as children's engagement in literary activities showed positive school results as compared those who are not engaged in literacy activities.

Third objective of the study was to compare the target and achieved scores of LND of district Gujranwala with other districts of Punjab. Scores of LND drive of different districts were analyzed by dividing districts into three regions North, South and Central Punjab. From every district, five districts were randomly selected for comparison. It was noted that all the districts of North Punjab (Rawalpindi, Bhakkar, Sarghoda, Kushab & Gujrat) were able to meet the target scores 80% mostly. However, district Sargodha was on top with 95% by exceeding the target in LND drive. In Southern Punjab (Multan, D.G khan, R.Y. Khan, Bahawalpur & Layyah) despite few variations, most of the districts met the target scores of LND drive. Here D.G Khan was on top with 90% among all districts. Likewise in Central zone (Lahore, Faisalabad, Jhang, Sahiwal & Sailkot), the entire district were successful in meeting the target

except district Sahiwal. This shows that LND drive is successfully implemented by Education department in different districts of Punjab. To strengthen this notion, teachers also highlighted the effectiveness of LND drive. Teachers responded this LND drive as fruitful and effective ( $M = 3.47$ ,  $SD = 1.23$ ), played positive role in basic learning ( $M = 3.72$ ,  $SD = 1.12$ ) and makes students responsible and punctual ( $M = 3.89$  &  $SD = 1.08$ ). Kennedy et al. (2012) argued that if children's literacy level is low, it would cause other academic problems at acquisition level. The low level then further creates difficulties in obtaining educational goals (Ozola, 2008). This means that at basic level, students are being subjected to improve their basic skills which ultimately improve their learning later in life. Gee (2000) stressed that literacy is highly a social practice associated with wider social benefits for society and community in long run. Street (2005) asserted that literacy is basic requirement to acquire desired skill and knowledge.

### **Conclusion and Implications**

It is concluded that Literacy and Numeracy drive is successfully implemented in District Punjab. The result of this drive is positive and effective throughout the year from January 2018 to March 2019. Students' basic language and understanding skills are improved. Teachers expressed positive behavior and improvement in. Moreover, this drive is acting as catalytic agent in transforming schools management practices to become more concerned about achieving targets set by department of education. The role of MEAs in implementing and directing this drive is important. Continuous support of regulatory authority (Punjab Education Department) is the key factor to make this drive successful and effective in all respects.

Based on the results of this study it is recommended that LND drive should be implemented in other provinces as well. Pakistan can achieve targets of SGDs goals if sufficient resources and efficient strategies are applied to eradicate illiteracy at each level (basic and adult). Keeping in mind the capacity of formal education system, a parallel informal infrastructure should be developed to support this drive at each district level. Government may seek help of retired teachers and unemployed graduates to implement LND positively. Also, government should seek community support to raise awareness among parents about literacy and its multidimensional benefits. Community may contribute in identifying the adults and children which are illiterate and bridge the gap of access and resources.

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