Learning Gaps due to COVID-19 among Middle School Students Indicated in Pandemic Era
An Analysis

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Abstract

COVID-19 has had a significant influence on all aspects of global human existence. It has had a huge impact on the education sector, specifically in the developing countries. The purpose of this paper is to explore learning gap on students' learning outcomes in subjects like English, Hindi and Maths due to the influence of the pandemic. The present paper is based on qualitative research design in which teachers, students and parents were interviewed and triangulation has been done through observation and focus group discussion. Study has been conducted from April 2022 (first week of school reopening after pandemic) to May 2022. Total 82 boys and girls of Class VI, VII and VIII were selected through purposive sampling and assessed to know the learning outcomes based on their reading ability of their own textbook, interpreting given picture text in writing, solving maths questions of their respective class related to operation of numerals, shapes, and geometrical understanding. Around 81 students, 10 teachers and five parents were also included as samples. Findings reveal that the majority of learners have been suffering from the problem of learning gaps due to lack of student-teacher interaction, access to resources, lack of attentive feedback to each individual learner and other equitable facilities. The Government has made significant efforts to respond to the effects of COVID-19, and the commitment is reflected in the various online platforms regarding dissemination of content of each school subject but perennial learning loss occurs in middle schools.

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INTRODUCTION

COVID-19 has affected all aspects of global human existence, including social, economic, environmental, healthcare, etc. It has a significant influence on the education sector, particularly schooling in under-developed countries.

The pandemic introduced many challenges, it was an unexpected school shutdown with other consequences like adverse health impacts in the household due to COVID-19 (Patra and Patro, 2020). Frequent lockdowns and the difficulty of ill-equipped institutions to accommodate unexpected online classes caused significant disruptions in school instruction, consequently the students face problems to continue their learning and it further reflects in the form of learning gap. Learning gap is a discrepancy between what the student has learned and what a student was expected to learn by a specific point in their education.

The Government of India imposed the first lockdown in March 2020, when schools had hardly been able to operate for more than a whole academic year. 82 per cent of parents faced challenges in supporting their children to access digital education; signal and internet speed were the biggest issues (Oxfam, 2020). Students losing their systematic education government providing complete support to the students by promoting the students to the next level without conducting the examination or taking online exams due to the severe infection of coronavirus and complete lockdown.

Kaffenberger (2021) determined that a three-month school shutdown might result to a year of learning loss. During the previous two years, pandemic have affected around 25 billion kids in approximately 15 million schools. 80 per cent of children aged 14–18 years reported lower levels of learning than when physically at school (UNICEF, 2021). In India, the majority of rural regions lack or have inadequate internet access. Despite the various issues and challenges faced by the citizens, it is also found that the availability of cellphones at home increased from 36.5 per cent in 2018 to 67.6 per cent (ASER, 2021).

The word learning outcomes are defined as 'statements of what a learner knows, understands and is able to do after completion of learning' (Bulgarelli, 2009). Meanwhile, learning loss refers to any specific general loss of knowledge and skills, or to reversal in academic progress (Angrist et al., 2021). 'Curricular expectations' define what a child should know and be able to do as well as the dispositions that should be acquired over a period of time (NCERT, 2017). According to many researchers, school students are also facing learning gaps and learning loss, so they are able to update their theoretical and practical knowledge.

This paper focused on the middle stage students' achieved learning level with reference to the learning outcomes discussed at NCERT (2017). This paper also investigates the influence of the pandemic on children's learning level, their frequency of dialogue

with teachers, and the online class accessibility issues of the middle stage school.

To know the impact of COVID-19 or the school closure on the learning of various researches reviewed such as Azim Premji University (2021) conducted field research on the loss of learning experienced by approximately 16067 pupils in 1137 public schools, from Grade 2 to Grade 6 in reference to math and language abilities. The study found that the majority of children in elementary classrooms have demonstrated learning loss. Amin, S., et.al., (2021) found that there was significant learning loss during COVID-19. Angrist, et. al. (2021) has suggested that without urgent action, these short-term learning losses could stunt and affect the next generation for a lifetime.

UNICEF Report (2020) mentioned that about 463 million children may not benefit from remote learning due to the lack of adequate home resources or regulations. *UNICEF report* (2021) stated that children have lost 10 per cent of their education owing to the digital divide. Around 70 per cent of the population does not have access to the internet, and connections are inadequate. Researchers also found there was a lack of awareness amongst parents and children about modes through which education was being delivered. So here the research queries arise such as, what kind of learning gap is found in the government middle schools of Delhi? Are middle school students facing the problem of learning loss? What is the perception of teachers regarding the learning gap of the learners? How much are parents aware about students' learning gap?

OBJECTIVE OF THE STUDY

To assess and estimate the learning level among middle stage students in subjects like English, Hindi and Maths with reference to the learning outcomes developed by NCERT (2017) expected at respective grades.

To explore the perception of teachers, students and parents towards the issues and challenges related to students learning in a post-pandemic context.

RESEARCH METHODOLOGY

Under the qualitative research paradigm non-participant observations of middle classrooms were done. A purposive sampling was chosen, and the study's sample consists of 82 children from the middle schools of Delhi and their respective subjects English, Hindi, and Maths teachers (4+3+3) respectively. Prior permission was taken from the principal for Focus Group Discussion (FGD) and interview with teachers. Furthermore, the researcher attempted to comprehend 10 teachers', 82 students', and five parents' perceptions towards challenges and concerns related to learning in a post pandemic context. The data was gathered from April 2022 to May 2022.

Table 1
The Number of Students who Participated in the Study

Class	Girls	Boys	Total	Teachers	Parents
VI	12	17	29	4 English	2
VII	10	23	33	3 Hindi	1
VIII	8	12	20	3 Maths	2
Total	30	52	82	10	05

Sample size of Middle school students of government schools in Delhi.

Learning Outcomes

NCERT (2017) developed a document which includes learning outcomes in all the curricular areas at the elementary stage. The expected level of learning outcomes developed classwise from Class I to VIII for all subjects to provide quality education. The National Policy on Education (NPE) 1986, when revised as Programme of Action (PoA) 1992, emphasised that the Minimum Levels of Learning (MLLs) should be laid down and children's learning should be assessed periodically. Therefore, to investigate the reality of learning level, the data collected separately from middle stage Classes VI, VII VIII.

On the behalf of above discussed learning outcomes NCERT (2017) of language subject the parameters chosen by the researcher for assessment are discussed in Table 3.

Table 2
Curricular Expectations in Language Subject

Language	English or Hindi
Language Development	Recite poems, dialogues; speak and write language chunks (phrases, sentences from stories, plays, speeches, etc.
Decoding	Acquire the ability to listen and respond orally and in writing
Reading Comprehension	Understand the central idea and locate details in the text (familiar and unfamiliar). Comprehend and use the form and functions of grammar in context.
Writing	Write simple messages, invitations, short paragraphs, letter (formal and informal), applications, personal diary, dialogue from story and story from a dialogue or conversation in English

*Source:* Learning Outcomes in Language at Upper Primary Stage, NCERT (2017)

Table 3

Subjects	Subject Parameter	Learning Outcomes
Hindi	Language Development, Reading Comprehension and Writing	Oral and written skills, punctuation error, grammatical error and spelling errors.
English	Language Development, Reading Comprehension and Writing	Oral and written skills were assessed using textbook reading, passage dictation, and picture comprehension to identify punctuation errors, grammatical errors and spelling mistakes.

Analysis of Learning Level of Middle Stage Learners in Subject English

To know the learning level in English, researcher observes the classroom practices for one class per week separately, and then after permission of the teacher, researcher assesses the given assignment, test of 82 learners of respective Classes VI, VII and VIII. The given assignment was based on the curricular content of their textbook and the parameters discussed in Table 3

Language Development, Reading Comprehension and Writing. These are further categorised as discussed in Fig. 1 in the form of reading error, spelling error, punctuation error, interpreting picture text in writing and understanding English language instruction.

Graph 1 reveals that in passage dictation work, 80.49 per cent of middle stage students were unable to write words correctly in relation to spelling and grammatical error. In
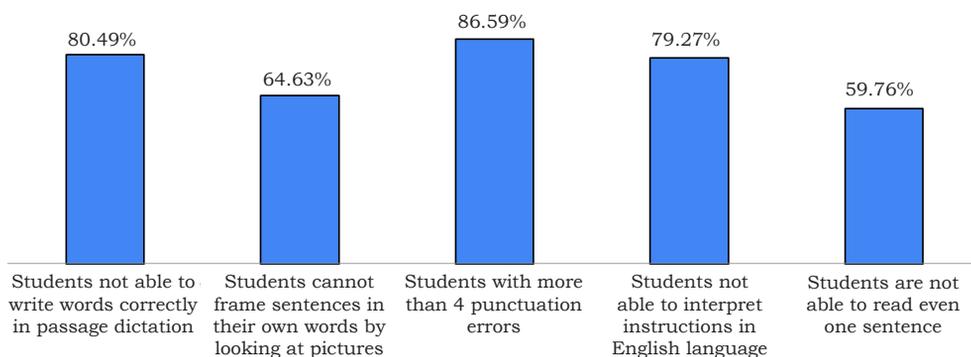
Graph 1: Assessment of Learning Level in English Language

the picture composition assignment, researchers were instructed to frame five sentences on the given picture of an English textbook. Around 64.63 per cent of students were unable to write simple sentences on the given picture in their own words. While assessing the punctuation mistake in passage and picture text writing, it was analysed that 86.59 per cent of students made punctuation mistakes. It also was observed that the majority of the learners of Class VI, VII and VIII were unable to understand English instruction and needed Hindi translation to understand the assigned task. It was analysed that 79.27 per cent of students were unable to interpret the teacher's instructions during assessment. Approx 59.76 per cent of

the students could not read even a single sentence properly.

The images in Figs. 1, 2, 3 and 4 below are some of the actual assessment papers that were collected and enclosed below here for reference.

In English assessment Class VI, students were unable to write simple words accurately such as 'barbar', (*bebar*) 'called', 'Cashgar', (*gashkar*) and 'talker'. (*tallr*). In Fig. 2, Class VII students during English assessment work, i.e., in passage writing did not use comma and full stop in any single sentences. So, the above figures reveal that students of Classes VI, VII and VIII have committed grammar and punctuation errors in their writing text. In Fig. 3 Class VIII students were
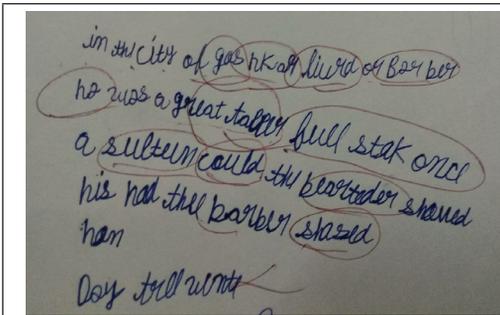

Fig. 1: Class VI English
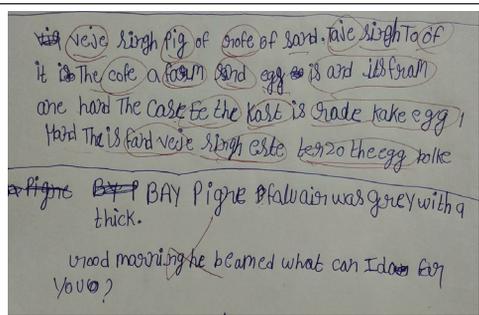

Fig. 2: Class VII English
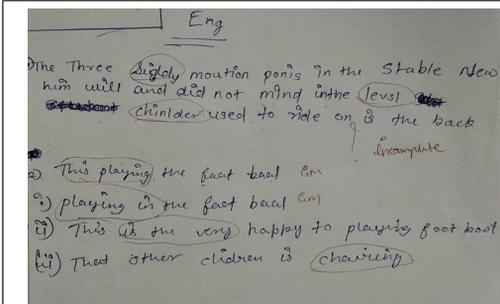

Fig. 3: Class VIII English
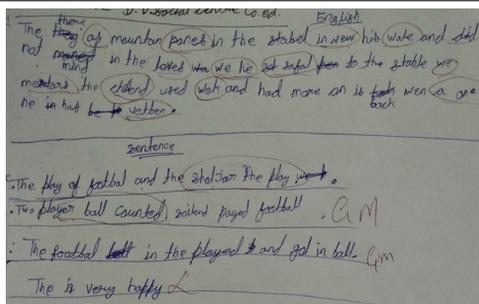
Fig. 4: Class VIII English

unable to write words like 'ponies' (*pony*), 'cage' (*kakagg*), 'children' (*chldrn*), 'shuffled' (*safal*), etc., and even the passage is incomplete. Student has written four sentences but not even a single sentence is correct. In Fig.4, Class VIII there are more than three types of errors in every line, while in sentence framing there is grammatical error in every sentence.

To know the factors responsible for learning outcomes in Classes VI, VII, VIII, researcher interviewed teachers of the respective class and subject and asked them questions, regarding the issues and challenges faced by them in relation to learning gap. What are the major reasons behind this problem and how they overcome from such issues in their daily classroom practices? The response of one of the English teachers of Class VIII was decoded as,

"Reading has become a bigger issue than it was previously in all classes. Class VI and VII students were unable to read the textbook. Students are unable to answer simple story-based questions or comprehend the meaning of the book. Many students have lost their ability to write in english due to school closure and online class practices. The students who mostly come to Delhi Government School are children of unskilled workers and non-literate parents also. They do not get any help from parents when they feel difficulty in reading and understanding difficult words."

Other English teachers mentioned, "Online lectures during COVID-19 pandemic were just a formality. Many students do not have internet and devices, so they were unable to take classes. This lacks our students' teacher interaction. We need to call the students and force them to at least write and complete the homework. Most of the students lacked behind and we can see learning loss in students. To put it another way, they can no longer read with comprehension. The current state of writing is much more difficult in the writing component, only eight to ten students from Classes VI, VII and VIII were able to produce a complete sentence which are free from the errors."

After analysing the above teacher response, it was found that teachers face different challenges. Like, students are not able to sit in class for four or five hours continuously as they are used to attending online classes while lying at home. The majority of the teachers share their opinion that students have a tendency to take shortcuts in their writing work and request to share the school work online instead of writing from black board. So it was found that after pandemic when schools reopened, students' study habits changed. Teachers also shared that students are not able to focus on the subject matter and they have become mobile addicted and they are facing the problem of learning gaps; which can be said as learning loss

according to teachers verbatim and also, there is lack of concentration in their study habits.

This shows the severity and nature of learning loss calls for immediate action at all levels. As children return to school, policies and processes to identify and address this loss are required. There is a need for extra attention in the form of supplementary class for extended hours, community-based engagements, or appropriate curricular materials. UNICEF Report (2021) also suggests teachers must be given the training, support and resources they need. Schools must go beyond places of learning and support children's well-being and safety.

Analysis of Learning level in Hindi Language:

To know the learning level in Hindi, researcher observe the classroom practices for each class separately, and then after permission of the teacheres researcher assess, the given assignment, test of 82 learners of respective Classes VI, VII and VIII. The given assignment was based on the curricular content of their textbook and the parameters discussed in Table 3: Language Development, Reading Comprehension and Writing. These are further categorised as discussed in Graph 2 in the form of reading error, spelling error, punctuation error, interpreting picture text in writing.

Graph 2 reveals that in passage dictation work, 65.85 per cent of middle stage students were unable to write *shabda* correctly in relation to spelling and grammatical error. While assessing the punctuation mistakes in passage and picture text writing, it was analysed that 75.61 per cent of students made punctuation mistakes. Around 82.93 per cent of student's responses showed syntax errors. It was observed that students don't know how to use *matras* while writing. Approx 60.00 per cent of students are unable to read even a single sentence properly.
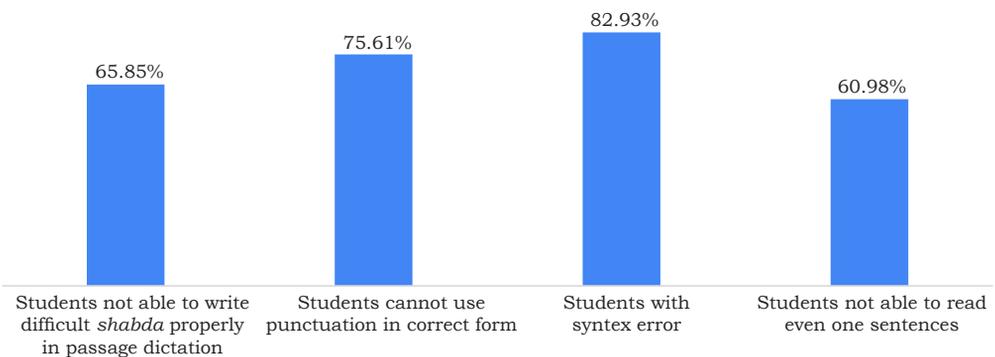
Graph 2: Assessment of Learning Level in Hindi

Class VI Hindi	*Class VI Hindi*
Class VII Hindi	*Class VIII Hindi*

Fig. 5–8: Assessment papers of Hindi language

The images in Fig. 5, 6, 7 and 8 below are the actual assessment papers of Hindi language that were collected and enclosed below as reference.

In Hindi assessment Class VI, students were unable to write *shabda* accurately 'लोगों', 'समझने'. There are many syntax errors, students don't know how to use *matras* while writing. In Fig.6, Class VI students made an error in writing *shabda* as well as punctuation errors, no *purnaviram* and comma are used. While in Fig. 7 and 8, there are more than three errors in every line. Students do not use any expression while reading. Students don't know how to write *shabda* like लोककथा, संस्कृति, दुनिया, etc., with *matras* in sentences as shown in the above image.

To explore the factors responsible for the learning gap in Hindi, when the teacher of Hindi subject was interviewed with the question, "Is COVID-19 pandemic responsible for the learning gaps?". The response of the Hindi teacher was decoded as

"When our students were in lower grade before the pandemic, they were able to read but after the pandemic more than half of them have forgotten how to read, and the condition of their writing has deteriorated. Even two or three sentences in the textbook are out of reach for the majority of students of Classes VI and VII. Many of the children who were learning to read have forgotten the names of the letters that they were taught because there was no one to motivate them."

Thus, it can be concluded from the study of the aforementioned verbatim that teachers view the COVID-19 situation as a possible cause, and that online teaching and learning plays a

Table 4
Curricular Expectations in Maths Subject

Subject	Mathematics
Numerical Concepts	Students should understand and apply concepts related to variables, expressions, equations, identities, etc.
Shapes and Spatial Understanding	Develop aesthetic sense by discovering symmetries in shapes like triangles, circles and quadrilaterals.
Numbers and Operations on Numbers	Count and understand the numeration system, solve problems involving large numbers by applying appropriate operations (addition, subtraction, multiplication and division).

*Source: Learning Outcomes in Mathematics Upper Primary Stage NCERT (2017)

significant part in learning loss. So, as the schools have reopened, there is an urgent need for a systematic plan to reorient school processes in order to compensate for learning loss among children.

Learning Level in Mathematics Subject

On behalf of the above discussed learning outcomes NCERT (2017) of Mathematics subject the parameters chosen by the researcher for Classes VI, VII, VIII assessment are discussed in Table 5.

Analysis of Learning Level of Middle stage learners in subject Mathematics:

Class VI students were asked to perform multiplication using basic arithmetic operations and the place value of five-digit numbers to determine if they could recognise numbers. In Grade VII, questions from the Class VI Math textbook involving fractions, arithmetic operations, and comparison were asked to be solved by putting the appropriate sign (<,=,>). The VIII graders were

Table 5
Learning Outcomes of Mathmetics Subject

Subject	Mathematics
Numerical concepts	Five-digit number identification
Shapes and Spatial Understanding	Geometric shapes
Numbers and Operations on numbers	Number comparison, three-digit multiplication, and equations

Class VI	Class VII
96% Not able to recognise geometrical shapes	**97%** Students were unable to solve the simple equations
86% Not able to read 6-digit number	**97%** Students were not able to compare Fractions of Class VI
90% Not able to do simple multiplication of three digits	**76%** Not able to do simple multiplication of three digits

Box 1 (response on Shape and Geometrical concept)   Box 2 (Response on Fraction and Math)

Class VII
80% Students were not able to solve the simple linear equations
80% Students were not able to do simplification question of Class VII
50% Students were not able to solve simple exponents and powers

Box 3 (Response on Simple Linear Equation and Fraction)

assessed using Grade VII textbook questions. 2 questions from Simple Linear equations, 2 Simplification questions, and 2 Fraction comparison questions were asked. These are further categorised as discussed in Boxes 1, 2 and 3 in the form of percentage analysis.

After analysis of the above-mentioned data, Box 1 Class VII, it was found that the geometrical shapes are not recognised by 93.90 per cent of students. When students were asked regarding the naming of place value in numeral, 73.17 per cent of students were unable to recognise the place value. On the question related to multiplication operations, 89.66 per cent of students are unable to perform simple three-digit multiplication. In Class VII, 97 per cent of students were not able to solve simple equations and failed to compare the fraction questions when asked from Class VI Math textbook. Data of Class VIII shows that 80 per cent of students were not
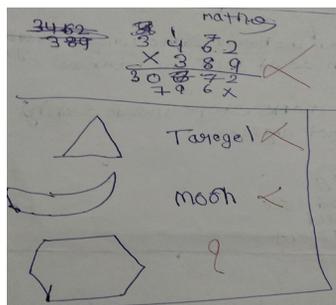

Fig. 9: Class VI Math
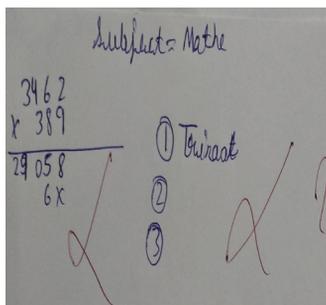
Fig. 10: Class VI Math
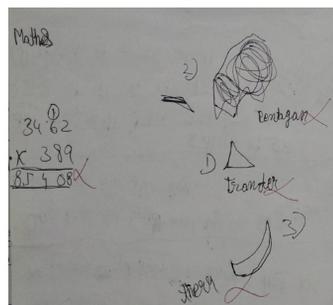
Fig. 11: Class VI Math
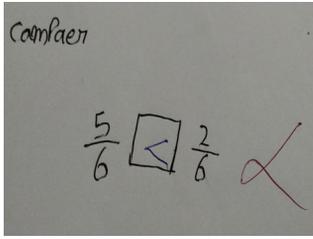
Fig. 12: Class VII Math
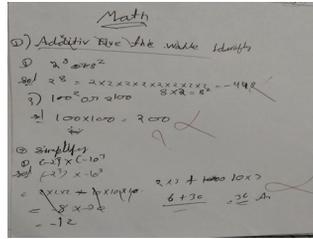
Fig. 13: Class VIII Math
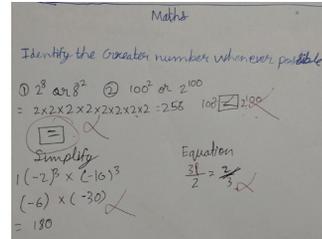
Fig. 14: Class VIII Math

able to solve the simple equations and even simplification questions of Class VII textbook. 50 per cent of students were unable not able to solve simple exponent and power questions of Class VII. To support the above data, some of the selected images of the Math evaluation of Class VI, VII, and VIII are presented in Figs. 9, 10, 11, 12, 13 and 14.

The accompanying Figs. 9, 10 and 11 indicate that Class VI children are unfamiliar with the names of shapes such as triangles, octagons, and crescents. If they know the shape, they cannot write since they do not know the correct spelling of the shapes. Even three-digit multiplication was given, and the images show that they were not able to follow the steps of multiplication. In Fig. 12, students of Class VII were unable to solve and compare fraction problems from lower class. In Fig. 13 and 14, we can see errors while solving the questions of exponents and powers, simplification, and fraction comparison. The majority of them cannot comprehend what is being asked in the question.

After interaction with a Math teacher on the causes of learning gap in Maths the response was decoded as,

"Learning gap is greater for students of Classes VI, VII and VIII because they have forgotten the basic understanding of mathematical operations. We can also say it as a learning loss because earlier, children could do sums and even practice on their own using examples from the textbook in their notebooks. Now when asked to do so, they are unable to do the same. This is probably because no one at home was paying attention to their studies. They have lost the ability to do simple mathematical operations".

To triangulate the research findings, researchers have taken the interview of some of the parents on the issues related to learning gaps and learning loss. Their voices were further interpreted as,

"From the past almost two years, schools have been closed for students. The school going students are the one who are most adversely affected due to school closure. The majority of students enrolled in government schools come from slum areas. It was impossible for online classes

to make much of an impact on the learning of our children. Many of the students have parents who are not educated at all so they feel helpless. Our children were not able to take online classes due to high internet charges and no devices, if devices are available, they are 2 to 3 siblings. All of them have online classes at the same time so they were unable to take online classes. Our children help us at home and were busy, caring for their younger siblings all day at home during COVID-19 pandemic. And our daughters were helping us in preparing meals for the family and doing other household chores all the time. School provided them with an opportunity to learn what they could with the least amount of effort. This routine has been utterly disrupted, and many of them may have lost their enthusiasm for studies."

After analysis of the above response, it was analysed that the majority of students enrolled in government schools come from slum areas. With limited resources and access to technology, parents and students struggled to attend online classes. Oxfam Status Report (2020) stated that low internet speed and poor signal are the major barriers to the learning process student. From the above data, it is interpreted that most of the students who are back to school are not ready, in terms of expected learning outcomes and abilities, for further learning at the appropriate class level. Many students have lost their ability to do simple solutions which they have already done in previous classes. There is a need to understand the nature of learning gaps and learning loss and come up with solutions.

DISCUSSION AND CONCLUSION

The present paper analysed the learning outcomes among middle school students in post pandemic situations when school reopens. It shows how the problem of learning gaps and learning loss is inherent in the classroom teaching-learning process. Research analysed how much learners are incapable in learning outcomes in subjects like English, Hindi and Math, and the major factors responsible for the same are lack of access to online resources, least face-to-face interaction with teachers, feedback mechanism from the teachers and parents during lockdown impact learning. It was observed in research that globally, children's and teenagers' pre-lockdown learning involved mostly one-on-one interactions with their mentors and peer groups.

The school closure has created an unmanageable gap between academic years. Teachers are faced with a 'dual dilemma'—Should they start with last year's course material or with the current class's curriculum? Non-attendance at school has harmed students' learning level as well as their social behaviour and problem-solving abilities. Long-term absence

of a regulated school environment has causeed disruptions in routine, boredom, and a lack of creative ideas for engaging in various academic and extracurricular activities. According to the researcher, children are becoming clingier, attention-seeking, and dependent on their parents. School closures lasted nearly two years. A child enrolled in Class VI in April 2020 has been enrolled to Class VIII in April 2022 without having encountered the Class VII expected curriculum and learning outcomes except through mobile learning, online learning, or community interactions. learning process was hampered even after schools reopened as a result of the lack of education during the pandemic.

Despite the pandemic, the Government has made significant efforts to respond to the effects of COVID-19, and its commitment to education is reflected in the NEP 2020. It will be critical to recovery to address the learning gap and learning loss suffered by children during school closure, particularly children from poor and displaced families. In terms of social skills, fitness, job prospects, and other areas, students are falling behind where they should be. Students struggled due to a lack of internet access or inability to afford it, as well as poor internet connectivity. All children in all types of schools and in all classes in schools must be addressed when it comes to learning loss. So, it is concluded that school closure and the lack of direct teaching-learning with children are likely to have contributed significantly to children's learning gap which can be said learning loss in relation to teachers and parents' responses and to help students regain lost abilities, there is urgent requirement of additional supplementary support in the form of coaching or remedial- diagnostic classes prior to attain new class promotion at school level.

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