

Engineering Students Case Study: Impact of various factors for E-Learning during Covid-19

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Abstract

Corona Virus has impacted in some other ways of everybody's life. It greatly affected the education sector in India. This sudden disaster resulted in the closing of all schools and colleges to avoid mass communication and contact. It was challenging to adapt to instant change in the teaching-learning process for students. There was a need to understand how students are accepting this change and the impact of students' learning approaches due to covid 19. This research focuses on examining students' learning habits during pandemic. A dataset was created to explore the conventions of Indian (Maharashtra) students during the period when schools and colleges were closed due to the novel coronavirus SARS-CoV-2 (COVID-19). In response to understanding the potential effects of the coronavirus pandemic, the questionnaires were spread over a network of educational communities on Facebook and Whatsapp from September 30 to October 20, 2020. Teachers and parents were given the survey by the researchers and were asked to sign a consent form before passing it on to their students and children. The survey included three major groups of significant actions in order to determine the impact of students' socioeconomic status and occupational aspirations on their learning habits during school closures: (1) Individual demographics, including family socioeconomic status; (2) Student's learning time spent during COVID-19, Support system as teachers and parents guidance, Infrastructure availability; and (3) Importance of Self-learning and Effectiveness of it. There were a total of 866 clicks on the survey link, but only 858 valid responses were considered for impact analysis of student learning habits during COVID 19.

Keywords: COVID -19, Mobile Learning, Offline learning, Online learning, Learning habits, Parental support.

I. INTRODUCTION

Importance of Data

This data set is broadly divided into three sections, Personal information of students which includes demographic information, parental status, and support system like siblings, teachers, parents, friends. It also focuses on time spent on learning per day during the pandemic. It has collected information about the opinion of students regarding the necessity of self-learning and its effectiveness. The dataset can be used by

researchers that want to look at how students learn in both normal and uncommon situations, such as a pandemic. It also gives insights on various factors which can have a direct and indirect effect on student learning like socioeconomic status, occupational aspirations, and student's learning habits. This dataset has information on Engineering students from India. It can be used to conduct a comparative study on students' learning approaches during the pandemic of different countries. It can also enhance the teaching-learning process of

engineering institutes by understanding changes in students' learning approaches and behavior. Institutes can be well prepared to handle such situations in the future.

2. Literature Review

In late 2019, SARS-CoV-2 coronavirus appeared in Wuhan, China. In January 2020, the primary deaths were reported, and by the end of January, many countries had confirmed the deaths, prompting the globe Health Organization (WHO) to declare a worldwide health emergency. Many countries recommend or must isolate themselves at a community distance of a minimum of two meters because the virus is very contagious, even for those that don't show symptoms (six meters). Because there's no vaccine that's suitable for months, many businesses are forced to shut thanks to government policy or recommendations (Taylor, 2020, April 28). Instruction professionals had to reorganize the teaching in only some days so as to maneuver classes far away from the individual to the net or other varieties of distance learning (Gardner, 2020, March 20). Students experience uncertainty, additional costs, anxiety, the impact of social isolation, and even difficulty sleeping when far away from their normal campus environment (Cao et al., 2020; Ghebreyesus, 2020; Weissman, 2020). Many students who were economically and internationally disadvantaged failed to have their own computers or internet access reception (Mukherjee, 2020, March 29). At the time of the closure of their colleges, several students who relied heavily on college facilities like food, housing, and health care had no "home" to return to (Weissman, 2020). As a result, schools had to become more creative. in keeping with a survey conducted by the Kaiser Family Foundation in April 2020 (Kirzinger, Kearney, Hammel, & Brodie, 2020), 45 percent of USA citizens say the epidemic has affected their mental state, with 19 percent saying it absolutely was "serious" in keeping with a separate Kaiser study. Family Foundation (Kirzinger, 2020), 58 percent of U.S. teens aged 18-24 say coronavirus has seriously damaged their psychological state. The emotional turmoil caused by the closure of the varsity, which received immediate attention in pedagogy Carolyn Foote (Yorio, 2020) said that managing student pressure caused by uncertainty and

isolation was at the center of far-flung learning, instead of just the proper thing to try to do. He said teachers need to "keep connected with their colleagues, be visible to students, [and] help students be visible to each other" (page 14). Parents send children to school/university for a minimum of three reasons, in line with Lieber (2020, May 1): (1) gaining knowledge and developing the brains of higher adults, (2) obtaining a diploma showing patience and success for prospective employers, and (3)) and to create friends and mentors who will support them in their lives, which is tough to attain once you study reception. Many students were looking forward to returning to campus. A student of 1 of the authors said, "I am an individual who benefits from having a face-to-face conversation and learning within the classroom. I've never seen what quantity I value social media on campus and the way much I appreciate what's happening." Coronavirus, 2020) Students engage in a very learning environment that promotes social and emotional development, promotes relationships and uses effective teaching strategies. Rice and Kipp, 2020, May 6).

3. Data Description:

During the school year and during the holidays, students' reading habits vary. Decreases in students' formal learning habits during the holidays are seasonal and predictable, but changes in their reading habits during the sudden spread are unknown. The decision to conduct cross-sectional research on the effects of the coronavirus novel epidemic may have encouraged the creation of this database. As a state dealing with the outbreak of COVID-19 quickly and effectively, the transformation of the education system was unexpected and had dire consequences. The learning habits of 866 students from various streams were studied in this database. Personal information, such as family economic status (SES), school type, and job aspirations; Student reading habits, such as study hours before and during school suspensions, with or without assistance; and students' views on their schooling during school closures are all included in the database.

4. Experimental Design, Materials, and Methods

After the first month of the opening of online schools across the country due to COVID-19, the survey was conducted between September 30 and October 20, 2020. Initially, online questionnaires were sent to grandparents and teachers participating in various Facebook forums. It was then passed on orally from parents and teachers. Only 858 valid reviews for continuous analysis were received for a total of 866 responses. Overall, regression analysis was used to investigate the impact of SES and student career aspirations on their learning habits during COVID-19:

$$B \sim \beta_0 + \beta_1 * A + \beta_2 * C + u$$

The research was based on earlier dynamic textbooks, with a focus on social and economic diversity. The variables in Group A are related to the number of students, such as factors that affect their socioeconomic status and ability to self-assess. Student learning habits are influenced by social and economic factors such as their parents' jobs, the number of siblings they have, the type of school they attend, and their grade level. We have added university courses, which reflect the aspirations of students in the profession, as well as English, which is a critical skill in today's world, in the case of Maharashtra. Student learning habits were measured using a variable in B according to their daily study

hours. Students were asked about their full hours of study before and after COVID-19. There were questions below about the total hours of offline and online learning methods, as well as the total hours of study with or without teachers when it comes to the total number of study hours during COVID-19. Group C flexibility is created for this data collection. All items within this section are rated using a five-point Likert scale (1: Completely Disagree, 5: Completely Agree). During COVID-19, researchers looked at students' views on the need for self-study. Students' reading habits are influenced by their beliefs about reading and the influence of teachers, parents, and peers, according to textbooks. This focuses on the flexibility of the need for "self-study" using the following parameters: (i) assurance of learning progress; (ii) Caring for learning habits; (iii) the influence of educators; (iv) parental influence; (v) the influence of siblings; (vi) peer pressure. Second, reports of student independence in the parameters that influence self-efficacy are considered. Physical factors (access to learning resources, learning space), psychological factors (motivation, family support), and behavioral factors all contributed to these changes (focus, goal setting, communication, and peer interaction). [T. Trung, A.-D. Hoang and TT Nguyen et al. / Summary data 30 (2020) 105682 7]. Methodology and Parameters shown in this paper is as follows:

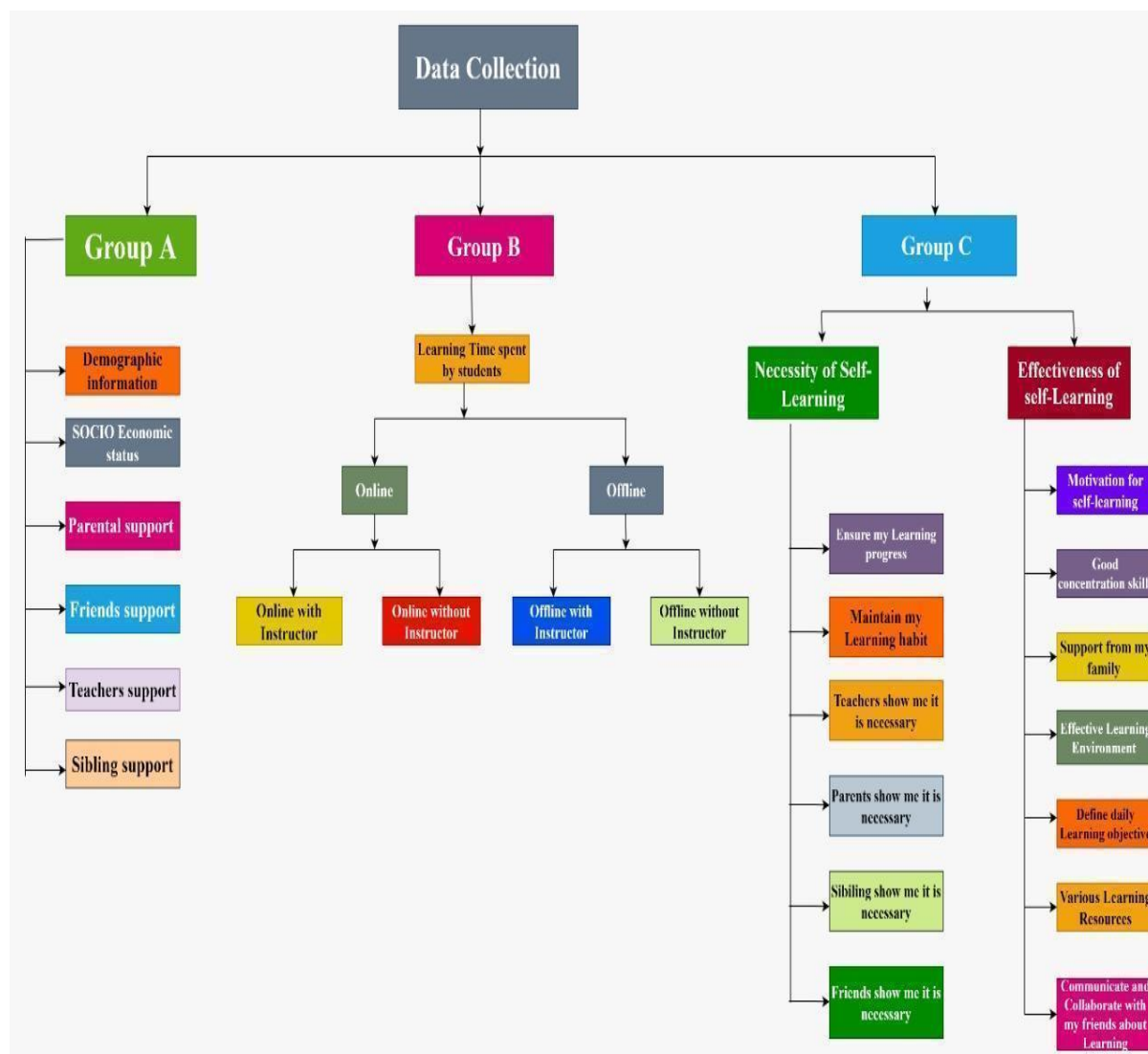


Figure1: *Methodology and Parameters*

Table 1 is divided into various sections which provide the impact of different factors such as demographic, socio-economic, and parent occupation on student learning approaches.

Table 2 Focuses on two important parameters, the Necessity of Self-learning and the effectiveness of self-learning. Values of Mean and Standard Deviation shows that Self-motivation as well as good concentration skill matters to achieve effective self-learning. Also, it has shown the importance of family support and daily defined self-learning objectives. The overall analysis shown in Table 2 states that in

order to maintain a good learning time and progress more motivation from family and teachers is required which will help the students to dedicate more time in studies instead of other activities.

Table 3 Focuses on two important parameters, online learning with the instructor and without an instructor. The offline learning with the instructor and without an instructor. The overall analysis shown in Table 3 states that in order to maintain a good learning time and progress students are comfortable with instructors for online learning during COVID 19.

Table 1: Descriptive statistics of Student learning and demographic during Pandemic

Learning Hours		N	Mean	Std. Deviation	Std. Error	Max	INTERVAL FOR MEAN		Min
							95% Confidence (upper bound)	95% Confidence (lower bound)	
Gender	Male	491	1.57076023	0.4952573738	0.07088741701	2	1.604685552	1.53817159	1
	Female	376	1.572928821	0.4949416428	0.08221830659	2	1.605638086	1.539221727	1
	Other	--	0	0	0	2	0	0	1
	TOTAL	858	1.57292882	0.49494164	0.016906884	2	1.606112626	1.539745017	1
Grade level	5-8 std	12	1.582278481	0.493574432	0.019633337	3	1.620833066	1.543723896	1
	9-12 std	10	1.571631206	0.495193695	0.018650074	3	1.60824763	1.535014782	1
	college	836	2.953191489	0.280663072	0.010570383	3	2.973944738	2.93243824	1
	TOTAL	858	2.96032672	0.25725707	0.008787734	3	5.903405412	2.943078691	1
School type	Public	169	1.809356725	0.4105248058	0.08165512593	3	1.83783012	1.782778779	1
	Private	683	1.805973696	0.416670441	0.08150245197	3	1.838215773	1.783279554	1
	International	6	1.762711864	0.4716083009	0.09025873648	3	1.812086943	1.70491986	1
	TOTAL	858	1.81096849	0.40926320	0.013980165	3	3.594497572	1.783529077	1
Siblings	ONE	494	1.170588235	0.8281450072	0.05282790753	5	1.233616776	1.12193878	1
	TWO	163	1.175438596	0.8295509709	0.05304680127	5	1.230137975	1.118507491	1
	THREE	41	1.174541026	0.8323329896	0.05300629448	5	1.22636208	1.114466323	1
	OVER 4	17	1.159322034	0.8640827475	0.04512936824	5	1.230550274	1.118204174	1
	NO (0)	143	0	0	0	5	0	0	1
	TOTAL	858	1.17619603	0.83189514	0.028416997	5	2.296616912	1.120420879	1
Father's job	Services	505	2.164705882	1.420421965	0.0976918089	4	2.249015909	2.057397393	1
	Social Science	2	2.168421053	1.421541931	0.09785947218	4	2.264720171	2.074064876	1

	Free	51	2.15888503 8	1.418526865	0.0974291178 7	4	2.637426221	1.965313505	1
	other	300	2.15932203 4	1.425606285	0.1353881047	4	2.240025568	2.047744217	1
	TOTAL	858	2.16843210 5	1.4187324	0.028416997	4	1.231971186	1.120420879	1
Mother's job	Service	130	2.73176470 6	0.755694793 3	0.1232828154	4	2.782258786	2.680985088	1
	Social Service	3	2.73099415 2	0.756028585	0.1232480408	4	2.929227028	2.57846528	1
	House wife	694	2.72319703 8	0.763276469 6	0.1228961619	4	2.780492519	2.679156604	1
	Other	31	2.72881355 9	0.783123618 1	0.1353881047	4	2.771349296	2.662709603	1
	TOTAL	858	2.71715285 8	0.764553189 5145	0.028416997	4	2.266837037	2.076220139	
Subject group for the university exam	Science	187	3.25421686 7	1.256759884	0.1468607513	5	3.321713348	3.154140598	1
	Arts	15	3.23529411 8	1.245458736	0.1460067796	5	3.325358374	3.147509844	1
	Commerce	65	3.23976608 2	1.243177142	0.1462085965	5	3.323369458	3.146921314	1
	Technical	584	3.24078355	1.24951382	0.1462545142	5	3.326075246	3.15933899	1
	Medical	7	3.29152542 4	1.19654948	0.180517473	5	3.337738599	3.166483355	1
	TOTAL	858	3.24270711	1.24344868	0.042475398	5	3.326075246	3.15933899	1
Performance, regarding your selected subject group	Below average	21	2.65647058 8	0.659879536 9	0.1198848394	4	2.779734268	2.621674183	1
	Average	319	2.65964912 3	0.659960518 6	0.1200282847	4	2.692741877	2.595157984	1
	Good	449	2.65039770 2	0.666136585 7	0.1196107739	4	2.702949338	2.571440906	1
	Excellent	69	2.71864406 8	0.658919589 9	0.1353881047	4	2.700288975	2.609723088	1
	TOTAL	858	2.65810968	0.65818546	0.022483187	4	2.702238317	2.613981053	
English capability	Below average	14	2.87647058 8	0.686423457 8	0.1298133004	4	2.936196328	2.833034441	1
	Average	217	2.87953216 4	0.686599581	0.1299514674	4	2.933608634	2.833195206	1
	Good	484	2.87435138 5	0.696769403 4	0.1297176621	4	2.925707422	2.833638373	1

	Excellent	143	2.86101694 9	0.703010278 8	0.1353881047	4	2.925707422	2.833638373	1
	TOTAL	858	2.87981330	0.68582167	0.023427222	4	2.925794829	2.833831775	1

Table 2: Descriptive statistics of Student perception of self-learning during Pandemic with school/college closure

Students' perception of self-learning during COVID-19	N	Range	Min	Max	Mean	Std Dev	Std Dev Err
Self-learning during school closure due to COVID-19 is necessary because...							
Ensure learning progress	858	4	1	5	3.55011655	1.02155588	0.1602145171
Maintain learning habits	858	4	1	5	3.545454545	1.10621838	0.1600041238
Teachers tell it is necessary	858	4	1	5	3.641025641	0.999087038	0.1643171869
Parents say it is necessary	858	4	1	5	3.874125874	0.8897219384	0.1748368532
Siblings show it is necessary	858	4	1	5	3.493006993	1.014744303	0.1576371989
My friends insist it is necessary	858	4	1	5	3.439393939	1.07878042	0.1552176756
I consider my self-learning activities effective because...							
Motivation for self-learning	858	4	1	5	3.797202797	0.9904522538	0.1713653633
Good concentration skills	858	4	1	5	3.417249417	1.096629348	0.1542183073
Support from family	858	4	1	5	4.156177156	0.8444148728	0.1875656494
Effective learning environment	858	4	1	5	3.624708625	1.071077374	0.1635808103
Daily learning objectives	858	4	1	5	3.543123543	1.008079629	0.1598989271
Different learning resources	858	4	1	5	3.695804196	1.057067615	0.1667893085
Communicate and Collaborate with friends about learning	858	4	1	5	3.686480186	1.033094823	0.1663685218

Table 3: Descriptive statistics of Student perception of online and offline learning with and without instructor during Pandemic situation

Learning Time of Students	Duration	N	R square	Std. Error	95% Upper bound	95% Lower bound	SS	MS
Learning time before COVID-19	less than 4 hrs	581	0.767475888	0.704669072	0.804619	0.747313	1402.946	1402.946
	4-7 hrs	249	0.767115379	0.705074169	0.804774	0.747336	1398.451	1402.946

	above 7 hrs	28	0.767115379	0.70507416 9	0.804774	0.747336	1398.451	1398.451
TOTAL ONLINE Learning time during COVID-19	less than 4 hrs	142	0.827879288	0.82438753 2	1.130047	1.06289	2791.609	2791.609
	4-7 hrs	558	0.828110563	0.82383349	1.129448	1.062379	2792.389	2792.389
	above 7 hrs	106	0.827879288	0.82438753 2	1.130047	1.06289	2791.609	2791.609
ONLINE Learning time with the instructor during COVID-19	less than 4 hrs	21 4	0.84405 2032	0.7458 35047	1.08194 5	1.02084 2	2538. 064	2538. 064
	4-7 hrs	58 9	0.84436 4306	0.7460 18136	1.08355 3	1.02288 5	2584. 599	2584. 599
	above 7 hrs	55	0.84572 8111	0.7443 18453	1.09012 3	1.02861 9	2532. 956	2532. 956
ONLINE Learning time without instructor during COVID-19	less than 4 hrs	61 6	0.75934 8	0.8084 57	1.04686 9	0.97050 2	1757. 13	1757. 13
	4-7 hrs	20 9	0.75997 6	0.8080 7	1.11107 7	1.03029 8	1767. 705	1767. 705
	above 7 hrs	33	0.75997 6	0.6579 4	0.73657 8	0.68302 6	1171. 883	1171. 883
OFFLINE Learning time with the instructor during COVID-19	less than 4 hrs	66 6	0.76403 4	0.6626 68	0.74969 2	0.69580 2	1217. 106	1217. 106
	4-7 hrs	16 0	0.76429 6	0.6625 72	0.75025 2	0.69620 7	1211. 41	1211. 41
	above 7 hrs	32	0.761375	0.668354	0.754173	0.697104	1113.13	1113.13
OFFLINE Learning time without	less than 4 hrs	687	0.776775	0.622395	0.728991	0.678321	1151.181	1151.181

instructions during COVID-19	4-7 hrs	147	0.777157	0.622492	0.730351	0.679641	1154.078	1154.078
	above 7 hrs	24	0.772469	0.637421	0.737566	0.678114	888.339	888.339

5. Results and Discussion

This section discusses the result of research questions based on the information which was gathered and investigated. For different focuses, there are a few ends drawn out from the yield that were obtained after examination utilizing standard deviation and mean square qualities. Standard deviation estimates the scattering of the dataset comparative with its mean. Additionally, standard deviation determined the vulnerability as a hazard in the dataset which is the key essential danger measure that is utilized for investigation. Having the information different inquiries as boundaries parent occupation, English capacity, self - learning and so on

Table 4 shows various research questions framed to understand the impact on student learning. Values of Mean and standard deviation states the impact of different parameters to support research questions. Student learning habits are

analyzed with various parameters such as Parent occupation, English capability, Self-learning necessity, and Effectiveness of self-learning.

The fluctuation decides the information spread size when contrasted with the mean worth. As the fluctuation gets greater, more variety in information esteem happens, and there might be a bigger hole between one information esteem and another. In the event that the information esteems are altogether near one another, the difference will be more modest. Anyway, this is harder to get a handle on than the standard deviation since change addresses a squared outcome that may not be definitively communicated on a similar diagram. From the above rationale, we can close utilizing table 4.

As shown in Table 4 following research questions have been framed to understand the impact of various factors on student learning approaches during COVID-19.

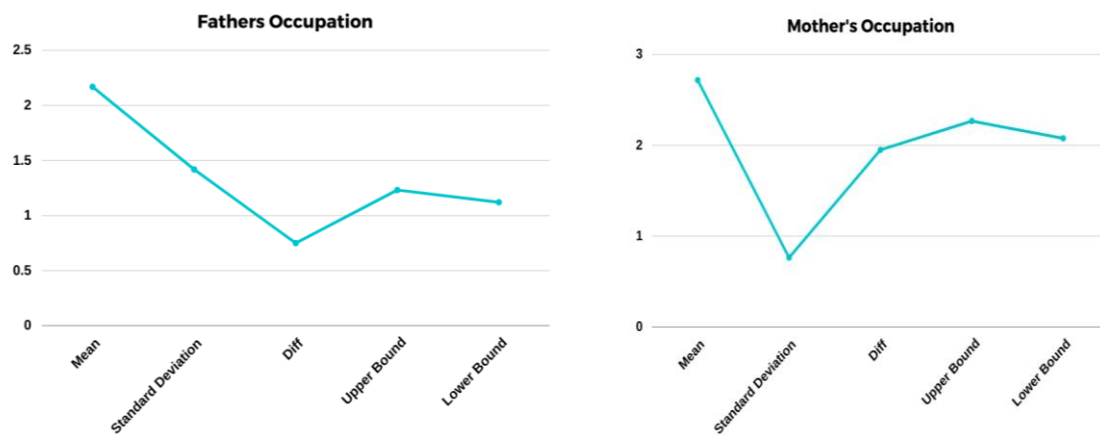
Table 4: *Research Questions and its supportive factors*

Research Questions	Mean	Standard Deviation	Diff	Upper Bound	Lower Bound
RQ1: Does parent occupation have an impact on students' learning? Construct: Parental Occupation					
Fathers Occupation	2.1684 32105 3	1.4187324	0.75	1.2319711 86	1.1204208 79
Mothers Occupation	2.7171 52858 8	0.764553189 514	1.95	2.2668370 37	2.0762201 39
RQ2: Does English Capability matter? Construct: Level (Good to Excellent)	2.8798 13302	0.685821673	2.19 4	2.9257	2.8338
Research Questions	Mean	Standard Deviation	Diff	Max	Min
RQ3: Is Self Learning Necessary during School Closure? Construct: Attitude towards self-learning					

Teachers tell it is necessary	3.6410 25641	0.999087038	2.64 8	5	1
Parents say it is necessary	3.8741 25874	0.889721938 4	2.98 5	5	1
Ensure learning process	3.5501 1655	1.02155588	2.52 9	5	1
RQ4: Is self-learning Effective? Construct: factors to make it effective					
Support from family	4.1561 77156	0.844414872 8	3.31 1	5	1
Motivation for self-learning	3.7972 02797	0.990452253 8	2.80 7	5	1
Different learning resources	3.6958 04196	1.057067615	2.63 8	5	1
Communicate and collaborate with friends about learning	3.6864 80186	1.033094823	2.65 34	5	1

Research Questions	Upper Bound	Lower Bound	Rsquare	MS	SS
RQ5: Is learning time more spent on online learning before covid19? Construct : learning time before COVID19	0.8047	0.7473	0.7671	1398.451	1402.946
RQ6: Is a student comfortable with online learning with an instructor during COVID-19? Construct: online learning with an instructor	1.0835	1.0228	0.8443	2584.599	2584.599
RQ7: Is the student comfortable with online learning without an instructor during COVID-19? Construct: online learning without an instructor	1.0468	0.9705	0.7599	1757.13	1757.13
RQ8: Is the student comfortable with offline learning with an instructor during COVID-19? Construct: offline learning with an instructor	0.7541	0.6971	0.7642	1113.13	1113.13
RQ9: Is the student comfortable with offline learning without an instructor during COVID-19? Construct: offline learning without an instructor	0.7375	0.6781	0.7724	1154.078	1154.078

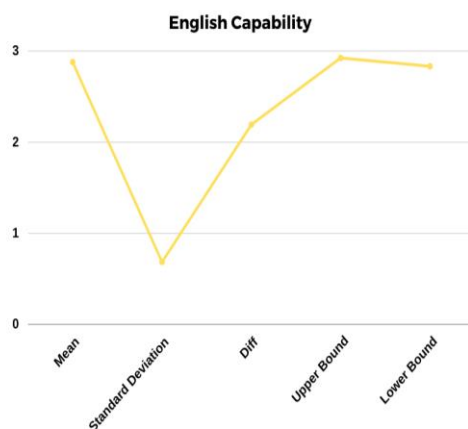
RQ1: Effect of parental occupation does not affect the learning of students since the difference of mean and standard deviation is less than 1. (for instance Mean = 2.1684321053, Std deviation = 1.4187324, Diff- 0.749699) for father occupation but it affects much in case of mother occupation(Mean = 2.7171528588, Std deviation= 0.764553189514, Diff- 1.95259). Fig.1 shows a detailed analysis.

Fig1: *Impact of Parental occupation(RQ1)*

The above chart depicts the same.

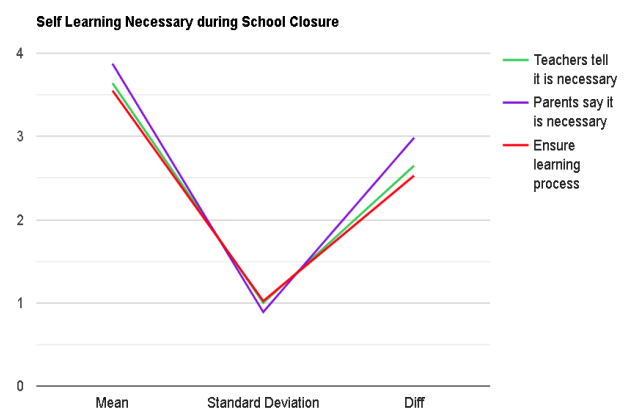
RQ2: Does English Capability matter?

Yes, Effect of English capability do play an important role in the learning of student since the difference of mean value and standard deviation tends to be greater than 2 (Mean = 2.879813302, Std deviation =0.685821673, Diff =2.193991629). Fig 2 shows the graphical analysis for the same.

Fig2: *English Capability(RQ2)*

RQ3: Is Self Learning Necessary during School Closure?

Incase of self-learning attitude with teacher, parent, and learning process the difference is more than 2 which affects in a larger way. Fig 3 shows the descriptive graphical analysis taking the three factors into consideration.

Fig3: *Sef Learning Necessity (RQ3)*

RQ4: Making learning effective the factor that is taken into account was

1. Support from family
2. Motivation for self- learning
3. Different learning resources
4. Communication and collaboration with friends about learning all has a good impact on the self-learning process

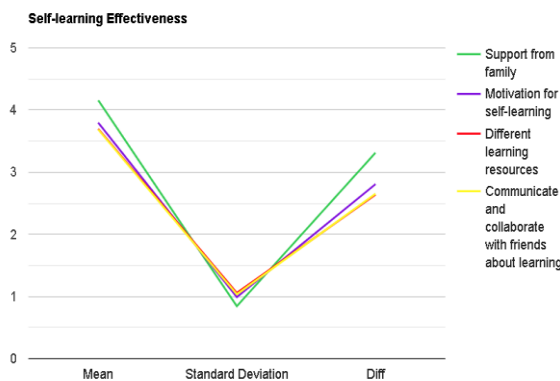


Fig4: *Effectiveness of Self Learning(RQ4)*

All the above factors create a huge impact on students' learning for the following reasons, first, the difference between the mean and standard deviation is greater than 1. Fig 4 shows the descriptive graphical analysis taking the four factors into consideration.

RQ5: Is learning time more spent on online learning before covid19?

The duration lies in the following frame i.e less than 4,4-7, above 7 hours with R square value around 0.767475888 which is closer to 1 which makes the model well fitted and also indicates that around 76% of the variance of the dependent variable being studied is explained by the variance of the independent variable. Also, the upper bound is 0.804774 which is less than 1 which signifies that the duration is less as compared to the duration of online learning (upper bound = 1.130047). Fig 5 shows the detailed analysis.

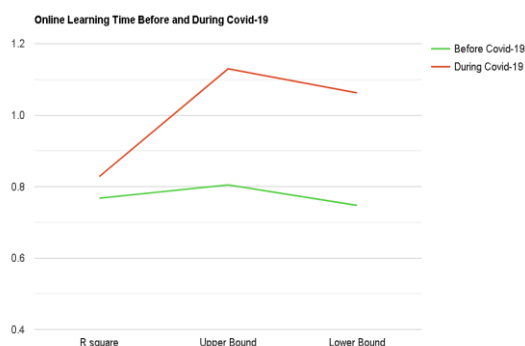


Fig5: *Online Learning Time Before and During Covid-19(RQ5)*

RQ6: Is a student comfortable with online learning with an instructor during COVID-19?

It creates a huge impact on the learning of students as we can see from the analysis that the value of the sum of squares and mean squared errors are comparatively more as compared to no instructor online (ss with instructor =2584.599 | without instructor = 1767.705) (ms with instructor =2584.599 | without instructor = 1767.705). Fig 6 shows the graphical chart for the same while also showing the difference between the values when the instructor is present or absent.

RQ7: Is the student comfortable with online learning without an instructor during COVID-19?

Taking the analysis into account, we can say that the student is more comfortable with the instructor rather than being without, the comparative analysis of values of the sum of squares and mean squared errors portrays the same. (ss with instructor =2584.599 | without instructor = 1767.705) (ms with instructor =2584.599 | without instructor = 1767.705) . The graphical analysis is shown in Fig 6.

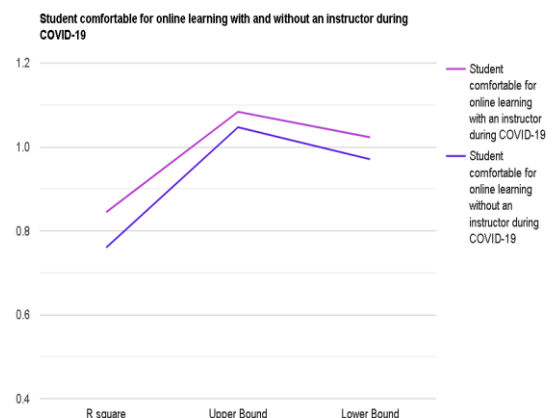


Fig 6: *Student comfortability for online learning with and without an instructor(RQ6 & RQ7)x*

The above graph explains the key difference between having an instructor during covid-19

RQ8: Is the student comfortable with offline learning with an instructor during

COVID-19?

Having an instructor creates a positive impact on the effectiveness of the student. Not only in

online teaching but also in offline teaching. The descriptive analysis suggests the same. Taking the features like the sum of squares and mean squared errors, the value for (ss with instructor = 1211.41 | without instructor = 1154.078) (ms with instructor = 1211.41 | without instructor = 1154.078)

RQ9: Is the student comfortable with offline learning without an instructor during

COVID-19?

As given above, the impact of an instructor creates a positive effect on the student and on his learning which is clearly visible taking into account all the duration (i.e less than 4, 4-7, above 7 hrs) wherein each case the value of the sum of squares and mean squared errors is greater for learning with the instructor. The graphical analysis for the same is shown in Fig 7.

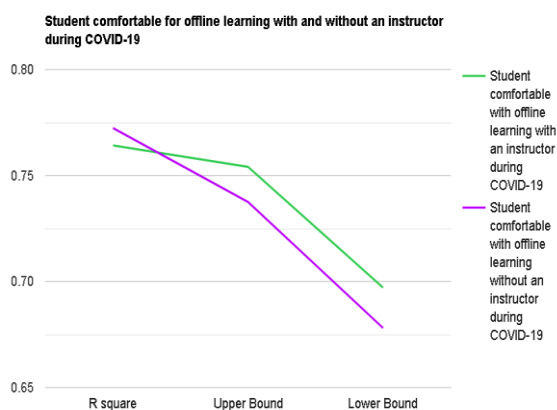


Fig 7: Student comfortability for offline learning with and without an instructor(RQ8 & RQ9)

6. Conclusion

This study has explored the impact of various parameters on student learning approaches during COVID-19. Limitations of the study include the relatively short duration of data collection and the resulting geographic weighting of mostly Maharashtra state respondents from India. The researchers were also unable to directly ask students about their experiences, so relied on their survey opinions. Further research could collect data over a longer period of time, seek additional ways to balance

the data geographically and attempt to sample students directly.

Thus it can be concluded from Table 2 that in order to maintain a good learning time and progress more motivation from family and teachers is required which will help the students to dedicate more time to studies instead of other activities. Further, it shows that the impact of instructors creates a huge effect on the learning of students in online as well as offline learning along with the exponential growth of online learning after COVID-19 considering Table 3. Further, taking in regards to Table 4, it is observed that, the factors like Parental Occupation, English Capability, Self Learning creates a positive impact on student's learning along with the help of an instructor to alleviate the learning of the student.

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