

# A SURVEY AMONG COLLEGE STUDENTS ABOUT THEIR OPINION ON ONLINE CLASSES DURING COVID-19 LOCKDOWN

<sup>1</sup>Taanya Imtiaz, <sup>2</sup>Kavitha. S, <sup>3</sup>V. Vishnupriya, <sup>4</sup>Gayathri. R

<sup>1</sup>Saveetha Dental college and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai.

<sup>2</sup>Lecturer, Department of Biochemistry, Saveetha Dental college and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai.

<sup>3</sup>Professor & Head, Department of Biochemistry, Saveetha Dental college and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai.

<sup>4</sup>Assistant Professor, Department of Biochemistry, Saveetha Dental college and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai.

<sup>1</sup>[151901058.sdc@saveetha.com](mailto:151901058.sdc@saveetha.com)

<sup>2</sup>[kavithas.sdc@saveetha.com](mailto:kavithas.sdc@saveetha.com)

<sup>3</sup>[vishnupriya@saveetha.com](mailto:vishnupriya@saveetha.com)

<sup>4</sup>[gayathri.sdc@saveetha.com](mailto:gayathri.sdc@saveetha.com)

## ABSTRACT:

**Introduction:** Online classes due to lockdown has been an unavoidable essential part of our daily life. In this study the opinion from different mentalities will be noted to get an intention about online classes. Different questions were asked about the classes for instance: class organisation, helpfulness, interest, accessibility, comfortability, impact of learning, comparison between regular and online classes and their preferences among them. This is attained due to different advanced social platforms. **Materials and methods:** The survey was conducted among 153 college students in 2020. The students were interviewed with a questionnaire containing 15 explanatory questions about online classes during lockdown. The data was then collected and manipulated in 2020 using SPSS software (chi square test). **Results:** 57.3% of the student population replied that the online classes are helpful, 29.3% may be and rest 13.3% replied no. 52.6% said that they invest proper time for learning and 32.9% sometime, rest 14.5% replied no. 66.7% replied that effective communication was attained and 20.2% not sure and the rest of 13% said no. 38.6% said the classes are good, 37.3% said classes are average and 16% said very good and rest of them said no. More than 87% of them preferred regular classes than online classes and the rest 12% said online classes. **Conclusion:** If a proper algorithm and plan is followed the online classes conducted will be welcomed by the students, few disadvantages of social media and cyberspace are present.

**Keywords:** COVID-19; Lockdown; Online classes; Regular classes; College students opinion.

## INTRODUCTION:

At the end of 2019, Wuhan, China there emerged a deadly virus which took many lives and soon Wuhan in China became the hotspot and the main source of the ongoing pandemic [1]. People started travelling from Wuhan, China and soon it was spread globally USA, Korea, Japan, Singapore, Vietnam, and Thailand were the first countries to have encountered 9 cases of 2019- nCOV infection, this caused dissemination of the virus more rapidly. And it was reported that this infectious virus transmits through air droplets and human-to-human interaction [2] [3] [4] [5] [6]. But studies involving nanotechnologies [7] [8] [9] have better chances, in prevention and treatment of the disease. Nanotechnologies in healthcare are also used in diagnosis of diseases [10].

Coronavirus is a disease caused by a deadly virus called coronavirus, it's reported as an infectious disease which can be easily transmitted from person to person [11]. Coronavirus is an etiological agent that causes severe infections in humans and also most of the mammals. Due to its outbreak, it soon became pandemic, so in order to prevent yourself, the subject and implementation of lockdown and quarantine was announced [12]. So due to quarantine, people had to self isolate and stay home, thin use of public platforms were discovered to stay indoor but still work on our days. This study is about the conduction of online classes, students' opinion, effective communication and the benefits of online classes conducted using the latest technologies [13].

Coronavirus is the causative factor for lock-down and quarantine, as the number of cases increases day by day. A cure for this disease is still not found but, consuming natural immune boosting foods and being precautious is recommended as treatment for this disease. The main reason quarantine was implemented is to protect oneself from the disease and also to stop its drastic spreading. Schools and colleges use this time effectively by implementing online classes using the online platforms for communication and work-off which seems to be an advantage, so it's stated that technologies come handy for education. But other professions may work from home condition and some other professions are provided to work for limited working time. During this complex and unsolvable situation, doctors, police and social workers are being real heroes to protect our society.

The online classes conducted should be easily accessible uses of innovative ideas and interesting topics to maintain student's attention. These are quite a hardship but it's handled by use of the advanced online platforms, but it's also up to the students who would dedicate their proper time and utilize the best from these situations and do not disrupt the classes and ask to co-operate [14]. But due to extended online classes and no physical interactions and activeness, students tend to get obese, and obesity is becoming prevalent in childhood [15].

Distant learning is the main key concept of online classes, and it's the understanding and interaction between the students, institute and the interior factors [16] [17]. Often the online classes will be welcomed and liked by the students, bringing themselves for online class registration, in these studies [18] numerous students register for online class courses. But an opposing review for the business profited during lockdown were observed [19]. But there are impacts on conducting due to regional and instructional time across different countries which was inspected as a defect in [20].

Numerous research have been conducted in our department in various fields like cancer biology [21] [22] [23], natural medicines used as treatment [24] [25] [26] [27] , hepatitis [28], alkaline protease activity [29], diabetes [30]. Main aim of this study was to examine the working concentration, access to pay attention, comfortability and personal opinion of the online classes and also to realize the benefits of online classes using advanced and also new platforms.

#### **MATERIALS AND METHODS:**

This study was conducted in 2020 which included 153 colleges students and approved by the institutional review board different studies which support are [31] with sample size of 963 students, [32] sample size of 247 students, [33] student population is 113 in 2015 and [34] with student population as 100 in 2005, and the sampling method used in this study was random sampling.

A detailed questionnaire with 15 questions, based on online classes, interest, attitude, accessibility, comfortability and personal opinion on effective communication, the statistical data was created and called through [www.googleforms.com](http://www.googleforms.com) and was manipulated in google forms, google sheets, analysed, tabulated and interpreted and compared. Pie chart and Bar graph were used for representation of the data collected.

Data was collected in 2020, data collected was analysed using SPSS software and chi-square was used for the statistical tests. The analysis was percentage based. Dependent variables of this study were knowledge, liking and opinion. Independent variables of this study were caste, occupation, gender, height, weight etc. The data was first collected, then analyzed and interpreted during software analysis.

## **RESULTS AND DISCUSSION:**

The study population consisted of 153 college students, all of the students who had taken the survey were UG students of first, second and third years. The total population consisted 66.6% of females and the rest 20.2% were male who had taken up this survey shown in figure 1. The questions were generalized asking about the class interest, organization of classes, and the classes conducted are helpful, was it hard to focus on online classes, students opinion on total of the on-going online classes. After data collection the following results were observed: 61.3% of the student population thinks that the classes are well organized, 34.6% of them say it's somewhat organized and the rest 2.6% think it's not organized in figure 2.

57.3% of the students think it's helpful during this lock-down, 29.3% of the population says it may be, depending on the lecture and rest 13.3% says that it's not really helpful in figure 3. We studied the association between the year of study with their opinion about the online classes being helpful during COVID-19 lockdown. 30% of the first year student population, 26% of the second year students and the rest 19% of the third year students said yes in figure 10.

“Effective communication attained during online classes?”, 66.7% of the population says yes, rest 20.2% say not sure and 13% says no to this statement shown in figure 4. We studied the association between the year of study with their opinion about attaining effective communication during online classes in COVID-19 lockdown. 40% of the first year students, 38% of the third year students and the rest 24% of the second year students said yes in figure 11.

Comparison between online and regular classes were asked, and 72% students say there are differences in gaining knowledge from regular than online classes, rest 21.3% say sometimes (figure 5), and they were asked which method they preferred the most?, 88% says regular classes and rest 12% says online classes shown in figure 6. We studied the association between the year of study with their preference between regular and online classes. 52% of the second year students, 45% of the first year students and the rest 32% of the third year students preferred regular classes in figure 12.

And also their opinion about the on-going online classes, 38.6% said good, 37.3% said okay and rest 16% said it's very good and have so far been liking it in figure 7. We studied the association between the year of study with their opinion about the on-going online classes during COVID-19 lockdown. 25% of the second year student population, 21% of the first year students and the rest 19% of the third year students replied good in figure 13.

They were asked about the comfortability of attending online classes and also in distant learning, 48% said not all times, 41% said yes and the rest 10.6% of the students said no in figure 8. Atlast they were also asked whether they would recommend others to take up online classes, 44% said yes, 33.3% said they don't know and not sure, the rest of the population i.e21.3% said no in figure 9.

This study mainly focuses on students' opinion about the ongoing online classes, and whether its being effectively utilised. Main conduction of online classes during this quarantine is to not waste time but also be effective in an educational aspect. Advantageous sources for the classes are technological aids like

gadgets and different apps, which has been improving and emerging on new advanced platforms, working hands in concentration and paying attention while working.

To maintain utmost interest during online classes, the instructions must come up with critical thinking ideas and activities in classes to maintain their attention and interest [35], this question was asked and 44.7% of students said YES, 38.2% said sometimes and 17.1% of the population said NO. Among the study in figure 3, 57.3% of the participants said that the classes were helpful and 29.3% said may be, and using the chi square test p value was 0.477 ( $>0.05$ ) and hence it was statistically not significant in figure 10.

“Effective communication attained during online classes?” shown in figure 4 which was agreed by 66.7% and disagreed by 13% of the study participants and p value was 0.00 ( $<0.05$ ) and hence it was statistically significant in figure 11. Thus first years were the most to agree with attaining effective communication than the other years.

64.5% of the population said it's not hard for them to not lose focus when there are online classes, and the rest 35.5% said NO. 88% replied regular classes and 12% replied online classes in Figure 6 which represents the preference between regular and online classes, 52% of the second year students, 45% of the first year students and the rest 32% of the third year students preferred regular classes, and the p value was found to be 0.012 ( $>0.05$ ) and hence it was statistically not significant in figure 12. Students were asked about their proper time investment in learning during online classes and 52.6% said YES, 32.9% - sometimes and rest 14.5% said NO. 77.6% of the population had proper facilities at home to attend online classes, 13.2% said NO and 9.2% said not sure. Involvement and their dedication were asked, 56.6% were true to themselves, 22.4% said sometimes and rest 21.1% said NO. At last they were asked to share their opinion on the on-going online classes in figure 7, 25% of the second year students, 21% of the first year students and the rest 19% of the third year students replied good, and p value was 0.00 ( $<0.05$ ) and hence it was statistically significant in figure 13. The second years were more satisfied with the online classes when compared to the other years.

In figure 2, 61.3% of them think its well organized, 34.6% says somewhat organized and the rest says it is not that organized, and this study is compared to this [36] study because of the similar findings, there were clearly general factors which will bring controlled influence over all the online classes they are use of understandable and comprehensive ideas and designs, active and effective communications between the students and instructors and complete discussion among the course participate. But this study [37] reported when a proper algorithm is not followed and executed there will be not proper attention from the students and the program will lead to failure and prove consecutive sequences.

Investing proper time in learning during this lock-down while taking online classes, this statement was by all means what was accepted by 52.6%, 32.9% sometimes and the rest 14.5% said NO. But this above statement when compared to other studies two opposing units were found in the following studies [38] [39]. This study [38] reported about students using social platforms as a negative influence rather than positively, but teachers did their best to bring positive influence into the classes using Facebook, students tend to mislead and walk into the wrong path. The other study [39] reported that there is more distraction during online classes which include larger strength numbers.

Students were asked about the knowledge gained during regular classes any different from the online classes, 72% replied YES and 21.3% replied sometimes and the rest of the population said no in figure 5. And also in the very next question, they were asked which method they would prefer, “Online or

Regular?" in figure 6, it was fascinating to find the following: almost 88% of the population preferred regular classes and the rest 12% preferred online classes. This observation was compared with this study [40], all the interaction turned out positive for the online courses and the negative were technological discomfort and cyber-space.

Are students and teachers communication helpful at the very end of day? This was agreed by 66.7% of the population, 20.2% said not sure and the rest 13% disagreed in figure 4. But similar findings were found in these studies [41] [42]. This study [41] accounted for the importance and need of critical thinking to attain effective communication and use it to test problem solving skills of the students from the facilitators talk. The other study [42] said that online classes provide flexibility, and it's to the greater convenience to find cost effective educational approaches and courses anywhere which is an advantageous opportunity. But this study [43] reported that the online courses and classes conducted are not as effective as fact-to face interactive learning.

In figure 3, personal opinion of the students was asked about the ongoing online classes being helpful during this lockdown and it was found that 57.3% said YES, 29.3% said maybe and rest of the population i.e., 13.3% said NO similar findings in this study were found [44] when there is a higher level of motivation and dedication towards a topic there is a higher level of achievements shown as results, which makes oneself move towards the goal and attain it. This study reported [45] that students preferred regular classes than online classes, but the CGPA obtained did not differ from both the classes, results did lean to the traditional class techniques on the following four dimensions: knowledge perceived, competence and communication, hurdles and challenges and overall evaluation [45].

#### **LIMITATIONS:**

Personal opinions were quite mixed. The students may have proper facilities due to low financial status to join the classes, using gadgets will cause noticeable distractions, no one-to-one interaction and accessing difficulties to the facilities.

#### **FUTURE SCOPE:**

Future further studies needed, mainly on more information about the international courses and effectiveness, job opportunities in comparison, more opinion from students, effective learning establishment and also comparison on regular and online classes.

#### **CONCLUSION:**

In this study, online classes working and attainment was collected from students, and the majority of the study found it useful because of interesting activities and innovative learning methods, especially using online classes during this lock-down period if proper class conduction algorithm is followed.

#### **ACKNOWLEDGEMENT:**

The team extends our sincere gratitude to the Saveetha Dental College and Hospitals for their constant support and successful completion of this work.

#### **AUTHOR CONTRIBUTIONS**

Taanya Imtiaz, carried out the study, collected data and drafted the manuscript. Dr. Kavitha S designed the study and supervised in preparation of the manuscript. Dr. Kavitha S, Dr. Vishnupriya and Dr. Gayathri have coordinated in developing and final approval of the manuscript.

#### **CONFLICT OF INTEREST:**

The author has none to declare

## REFERENCES:

- [1] Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern [Internet]. Vol. 395, *The Lancet*. 2020. p. 470–3. Available from: [http://dx.doi.org/10.1016/s0140-6736\(20\)30185-9](http://dx.doi.org/10.1016/s0140-6736(20)30185-9)
- [2] Guan L, Zhou L, Zhang J, Peng W. More awareness is needed for severe acute respiratory syndrome coronavirus 2019 transmission through exhaled air during non-invasive respiratory support : experience from China, *Eur Respir Rev* [Internet]. 2020; Available from: <https://erj.ersjournals.com/content/55/3/2000352.abstract>
- [3] Lewis D. Is the coronavirus airborne? Experts can't agree. *Nature*. 2020 Apr;580(7802):175.
- [4] Vogt TM, Guerra MA, Flagg EW, Ksiazek TG, Lowther SA, Arguin PM. Risk of Severe Acute Respiratory Syndrome–Associated Coronavirus Transmission Aboard Commercial Aircraft. *J Travel Med*. 2006 Sep 1;13(5):268–72.
- [5] Azhar EI, Hashem AM, El-Kafrawy SA, Sohrab SS, Aburizaiza AS, Farraj SA, et al. Detection of the Middle East respiratory syndrome coronavirus genome in an air sample originating from a camel barn owned by an infected patient. *MBio*. 2014 Jul 22;5(4):e01450–14.
- [6] Ong SWX, Tan YK, Chia PY, Lee TH, Ng OT, Wong MSY, et al. Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient. *JAMA* [Internet]. 2020 Mar 4; Available from: <http://dx.doi.org/10.1001/jama.2020.3227>
- [7] Ke Y, Al Aboody MS, Alturaiki W, Alsagaby SA, Alfaiz FA, Veeraraghavan VP, et al. Photosynthesized gold nanoparticles from *Catharanthus roseus* induces caspase-mediated apoptosis in cervical cancer cells (HeLa). *Artif Cells Nanomed Biotechnol*. 2019 Dec;47(1):1938–46.
- [8] Li Z, Veeraraghavan VP, Mohan SK, Bolla SR, Lakshmanan H, Kumaran S, et al. Apoptotic induction and anti-metastatic activity of eugenol encapsulated chitosan nanopolymer on rat glioma C6 cells via alleviating the MMP signaling pathway [Internet]. Vol. 203, *Journal of Photochemistry and Photobiology B: Biology*. 2020. p. 111773. Available from: <http://dx.doi.org/10.1016/j.jphotobiol.2019.111773>
- [9] Wang Y, Zhang Y, Guo Y, Lu J, Veeraraghavan VP, Mohan SK, et al. Synthesis of Zinc oxide nanoparticles from *Marsdenia tenacissima* inhibits the cell proliferation and induces apoptosis in laryngeal cancer cells (Hep-2) [Internet]. Vol. 201, *Journal of Photochemistry and Photobiology B: Biology*. 2019. p. 111624. Available from: <http://dx.doi.org/10.1016/j.jphotobiol.2019.111624>
- [10] Wu F, Zhu J, Li G, Wang J, Veeraraghavan VP, Krishna Mohan S, et al. Biologically synthesized green gold nanoparticles from Siberian ginseng induce growth-inhibitory effect on melanoma cells (B16). *Artif Cells Nanomed Biotechnol*. 2019 Dec;47(1):3297–305.
- [11] Lippi G, Plebani M, Henry BM. Thrombocytopenia is associated with severe coronavirus disease 2019 (COVID-19) infections: A meta-analysis. *Clin Chim Acta*. 2020 Jul 1;506:145–8.
- [12] Khan MHR, Hossain A. COVID-19 Outbreak Situations in Bangladesh: An Empirical Analysis. *medRxiv* [Internet]. 2020; Available from: <https://www.medrxiv.org/content/10.1101/2020.04.16.20068312v1.abstract>
- [13] Bashford A. Quarantine and the imagining of the Australian nation. *Health*. 1998 Oct 1;2(4):387–402.
- [14] Pastor CKL. Sentiment Analysis on Synchronous Online Delivery of Instruction due to Extreme Community Quarantine in the Philippines caused by COVID-19 Pandemic. *Asian Journal of Multidisciplinary Studies*. 2020 Mar 20;3(1):1–6.
- [15] Shukri NMM, Vishnupriya V, Gayathri R, Mohan SK. Awareness in childhood obesity. *Research Journal of Pharmacy and Technology*. 2016;9(10):1658–62.

- [16] Dahl J. Strategies for 100 percent retention: Feedback, interaction. Distance Education Report. 2004;8(16):6–7.
- [17] Shih C-C. Relationships among student attitudes, motivation, learning styles, learning strategies, patterns of learning and achievement: a formative evaluation of distance education via Web-based courses [Internet]. Available from: <http://dx.doi.org/10.31274/rtd-180813-13793>
- [18] Moore MG, Kearsley GG. Distance education: a system view. 1996; Available from: <http://agris.fao.org/agris-search/search.do?recordID=XL2012000215>
- [19] P. V. R, Varma AJ. COVID 19-Indian Scenario, Challenges and Possible Revival Strategies [Internet]. 2020 [cited 2020 Jun 5]. Available from: <https://papers.ssrn.com/abstract=3573947>
- [20] Lavy V. Do differences in schools' instruction time explain international achievement gaps? Evidence from developed and developing countries. Econ J Nepal. 2015;125(588):F397–424.
- [21] Gan H, Zhang Y, Zhou Q, Zheng L, Xie X, Veeraraghavan VP, et al. Zingerone induced caspase-dependent apoptosis in MCF-7 cells and prevents 7,12-dimethylbenz(a)anthracene-induced mammary carcinogenesis in experimental rats. J Biochem Mol Toxicol. 2019 Oct;33(10):e22387.
- [22] Priya VV, Jainu M, Mohan SK. Biochemical Evidence for the Antitumor Potential of *Garcinia mangostana* Linn. On Diethylnitrosamine-Induced Hepatic Carcinoma. Pharmacogn Mag. 2018 Apr;14(54):186–90.
- [23] Ma Y, Karunakaran T, Veeraraghavan VP, Mohan SK, Li S. Sesame Inhibits Cell Proliferation and Induces Apoptosis through Inhibition of STAT-3 Translocation in Thyroid Cancer Cell Lines (FTC-133). Biotechnol Bioprocess Eng. 2019 Aug 1;24(4):646–52.
- [24] Chen F, Tang Y, Sun Y, Veeraraghavan VP, Mohan SK, Cui C. 6-shogaol, a active constituents of ginger prevents UVB radiation mediated inflammation and oxidative stress through modulating Nrf2 signaling in human epidermal keratinocytes (HaCaT cells). J Photochem Photobiol B. 2019 Aug 1;197:111518.
- [25] G R, Ramya G, V VP, Gayathri R. Cytotoxicity of strawberry extract on oral cancer cell line [Internet]. Vol. 11, Asian Journal of Pharmaceutical and Clinical Research. 2018. p. 353. Available from: <http://dx.doi.org/10.22159/ajpcr.2018.v11i9.25955>
- [26] Menon A, V VP, Gayathri R. Preliminary phytochemical analysis and cytotoxicity potential of pineapple extract on oral cancer cell lines [Internet]. Asian Journal of Pharmaceutical and Clinical Research. 2016. p. 140. Available from: <http://dx.doi.org/10.22159/ajpcr.2016.v9s2.13313>
- [27] Rengasamy G, Venkataraman A, Veeraraghavan VP, Jainu M. Cytotoxic and apoptotic potential of *Myristica fragrans* Houtt. (mace) extract on human oral epidermal carcinoma KB cell lines [Internet]. Vol. 54, Brazilian Journal of Pharmaceutical Sciences. 2018. Available from: <http://dx.doi.org/10.1590/s2175-97902018000318028>
- [28] Mohan SK, Veeraraghavan VP, Jainu M. Effect of pioglitazone, quercetin and hydroxy citric acid on extracellular matrix components in experimentally induced non-alcoholic steatohepatitis. Iran J Basic Med Sci. 2015 Aug;18(8):832–6.
- [29] Rengasamy G, Jebaraj DM, Veeraraghavan VP, Krishna S. Characterization, Partial Purification of Alkaline Protease from Intestinal Waste of *Scomberomorus Guttatus* and Production of Laundry Detergent with Alkaline Protease Additive. Indian journal of pharmaceutical education and research. 2016;50(2):S59–67.
- [30] Ponnulakshmi R, Shyamaladevi B, Vijayalakshmi P, Selvaraj J. In silico and in vivo analysis to identify the antidiabetic activity of beta sitosterol in adipose tissue of high fat diet and sucrose induced type-2 diabetic experimental rats. Toxicol Mech Methods. 2019 May;29(4):276–90.
- [31] Grijalva TC, Kerkvliet J, Nowell C. Academic honesty and online courses. Coll Stud J 2006;40(1). Available from:

[http://www.academia.edu/download/61609683/Academic\\_Honesty\\_and\\_Online\\_Courses20191226-91989-1v2m650.pdf](http://www.academia.edu/download/61609683/Academic_Honesty_and_Online_Courses20191226-91989-1v2m650.pdf)

- [32] Jeong W. Instant messaging in on-site and online classes in higher education. *Educause Quarterly*. 2007;30(1):30.
- [33] Kulkarni C, Cambre J, Kotturi Y, Bernstein MS, Klemmer SR. Talkabout: Making Distance Matter with Small Groups in Massive Classes. In: *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*. New York, NY, USA: Association for Computing Machinery; 2015. p. 1116–28. (CSCW '15).
- [34] Kim K-J, Liu S, Bonk CJ. Online MBA students' perceptions of online learning: Benefits, challenges, and suggestions. *The Internet and Higher Education*. 2005 Oct 1;8(4):335–44.
- [35] Brooke SL. Using the Case Method to Teach Online Classes: Promoting Socratic Dialogue and Critical Thinking Skills. *International Journal of Teaching and Learning in Higher Education*. 2006;18(2):142–9.
- [36] Swan K. Virtual interaction: Design factors affecting student satisfaction and perceived learning in asynchronous online courses. *Distance Education*. 2001 Jan 1;22(2):306–31.
- [37] Salfner F, Malek M. Using Hidden Semi-Markov Models for Effective Online Failure Prediction. In: *2007 26th IEEE International Symposium on Reliable Distributed Systems (SRDS 2007)*. 2007. p. 161–74.
- [38] Fewkes AM, McCabe M. Facebook: Learning tool or distraction? *Journal of Digital Learning in Teacher Education*. 2012;28(3):92–8.
- [39] Bugeja MJ. Distractions in the wireless classroom. *Chron High Educ*. 2007;53(21):C1–4.
- [40] El Mansour B, Mupinga DM. Students' positive and negative experiences in hybrid and online classes. *Coll Stud J*. 2007;41(1):242.
- [41] Nagel L, Blignaut AS, Cronjé JC. Read-only participants: a case for student communication in online classes [Internet]. Vol. 17, *Interactive Learning Environments*. 2009. p. 37–51. Available from: <http://dx.doi.org/10.1080/10494820701501028>
- [42] Wojciechowski A, Palmer LB, Others. Individual student characteristics: Can any be predictors of success in online classes. *Online journal of distance learning administration*. 2005;8(2):13.
- [43] Wuensch KL, Aziz S, Ozan E, Kishore M, Tabrizi M. Pedagogical characteristics of online and face-to-face classes. In: *E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*. Association for the Advancement of Computing in Education (AACE); 2006. p. 2422–9.
- [44] Wang C-H, Shannon DM, Ross ME. Students' characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning [Internet]. Vol. 34, *Distance Education*. 2013. p. 302–23. Available from: <http://dx.doi.org/10.1080/01587919.2013.835779>
- [45] Ganesh G, Paswan A, Sun Q. Are Face-to-Face Classes More Effective Than Online Classes? An Empirical Examination. *Marketing Education Review*. 2015 May 4;25(2):67–81.

### Figure titles

Figure 1: This bar graph represents the percentage distribution of gender of the respondents. The X-axis represents the gender and the Y-axis represents the percentage of responses. Blue denotes the female population and green denotes the male population. 66.6% of the respondents were female and 20.2% of the respondents were male.

Figure 2: This bar graph represents the percentage of responses of the students on their opinion on organization of the online classes. The X-axis represents the responses about the opinion on organization of online classes and the Y-axis represents the percentage of responses of college students. Orange denotes

well organized, blue denotes averagely organized and green denotes poorly organized online classes. Majority of the students (61.3%) responded as the classes were well organized.

Figure 3: This bar graph represents the percentage of responses on the opinion about the helpfulness of the conduction of online classes. The X-axis represents the responses about the opinion on helpfulness of online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes may be the online classes were helpful. Most of the respondents (57.3%) replied that conduction of online classes are helpful.

Figure 4: This bar graph represents the percentage of responses on their opinion about attaining effective communication during online classes. The X-axis represents the responses about the opinion on attaining effective communication during online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes not sure of the attainment of effective communication during online classes. Majority of the respondents (66.7%) replied that the communication during online classes is effective.

Figure 5: This bar graph represents the percentage of responses about the difference in knowledge gained from regular and online classes. The X-axis represents the responses about the opinion on differences between regular and online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes sometimes, there are differences between the online classes and regular classes. Majority of the respondents (72%) replied that the knowledge gained during regular and online classes are different.

Figure 6: This bar graph represents the percentage of responses about their preference between regular classes and online classes. The X-axis represents the responses about the preference between regular and online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes and green denotes no on respondents preference between regular and online classes. Most of the respondents (88%) prefer regular classes than online classes.

Figure 7: This bar graph represents the percentage of responses about their overall experience on online classes. The X-axis represents the responses about the total opinion on the on-going online classes and the Y-axis represents the percentage of responses of college students. Orange denotes very good, blue denotes good, green denotes average and red denotes not good, representing various opinions of the respondents. Majority of the respondents (38.6%) have the opinion that the online classes during the lockdown period are good.

Figure 8: This bar graph represents the percentage of responses about their comfortness in attending online classes. The X-axis represents the responses about the comfort of attending online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes not all times that attending online classes are comfortable. Most of them (48%) replied that they have the opinion that attending online classes is not comfortable all the time.

Figure 9: This bar graph represents the percentage of responses about the students whether they would encourage and recommend others to take up online classes. The X-axis represents the responses about the opinion on encouraging others to attend online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes don't know that the respondents would encourage others to attend the classes. Most of the students (44%) replied as they will encourage others to attend online classes.

Figure 10: The bar graph depicts the association between the year of study with their opinion about the helpfulness of the online classes during COVID-19 lockdown. X-axis represents the year of study and Y-axis represents the number of responses. Blue denotes yes, green denotes no and beige denotes may be.

Majority of the first year students (30 participants) have the opinion that the online classes are helpful. Pearson chi square test shows p value is 0.477 ( $>0.05$ ). Hence it is not statistically significant, the differences in the opinion among the students of three years were statistically not significant.

Figure 11: The bar graph depicts the association between the year of study of the respondents with their opinion about attaining effective communication during online classes in COVID-19 lockdown. X-axis represents the year of study and Y-axis represents the number of responses. Blue denotes yes, green denotes no and beige denotes not sure. Majority of the first year students (40 participants) were more satisfied with the communication attained during online classes. Pearson chi square test shows p value is 0.00 ( $<0.001$ ), hence it is statistically significant, first year students are more satisfied with the online classes than other students.

Figure 12: The bar graph depicts the association between the year of study of the respondents with their preference between regular and online classes. X-axis represents the year of study and Y-axis represents the number of responses. Blue denotes regular classes and green denotes online classes. Most of the second year students (52 participants) prefer regular classes than online classes. Pearson chi square test shows p value is 0.012 ( $<0.05$ ). Hence it is statistically significant, the preference towards regular classes than online classes is more among second year students than the other year students.

Figure 13: The bar graph depicts the association between the year of study of the respondents with their opinion about the on-going online classes during COVID-19 lockdown. X-axis represents the year of study and Y-axis represents the number of responses. Blue denotes very good, green denotes good, beige denotes average and purple denotes poor. Majority of the second year students (25 participants) responded to the online classes as good and majority of the first year students (11 participants) responded as the online classes were very good. Pearson chi square test shows p value is 0.970 ( $>0.05$ ), hence it is statistically not significant, the difference in opinion among the students is statistically not significant.

Figures

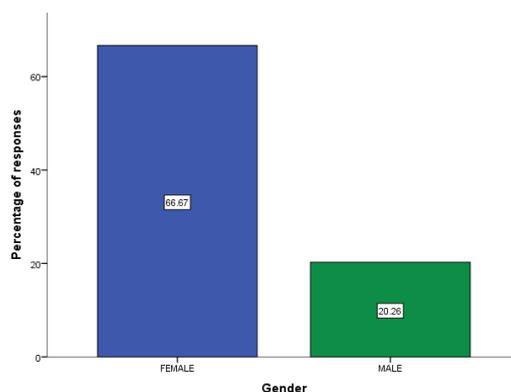


Figure 1: This bar graph represents the percentage distribution of gender of the respondents. The X-axis represents the gender and the Y-axis represents the percentage of responses. Blue denotes the female population and green denotes the male population. 66.6% of the respondents were female and 20.2% of the respondents were male.

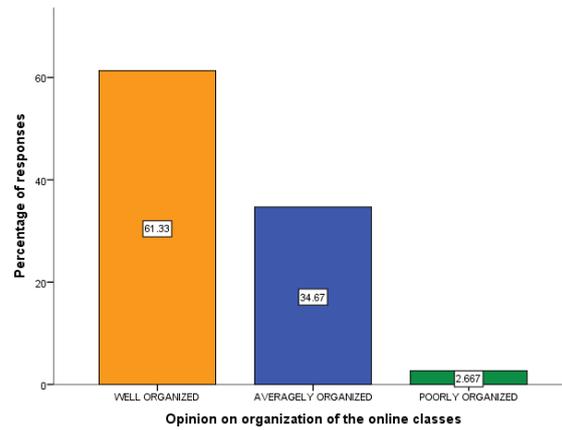


Figure 2: This bar graph represents the percentage of responses of the students on their opinion on organization of the online classes. The X-axis represents the responses about the opinion on organization of online classes and the Y-axis represents the percentage of responses of college students. Orange denotes well organized, blue denotes averagely organized and green denotes poorly organized online classes. Majority of the students (61.3%) responded as the classes were well organized.

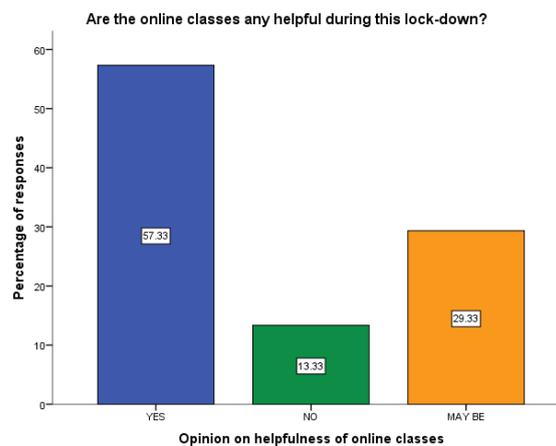
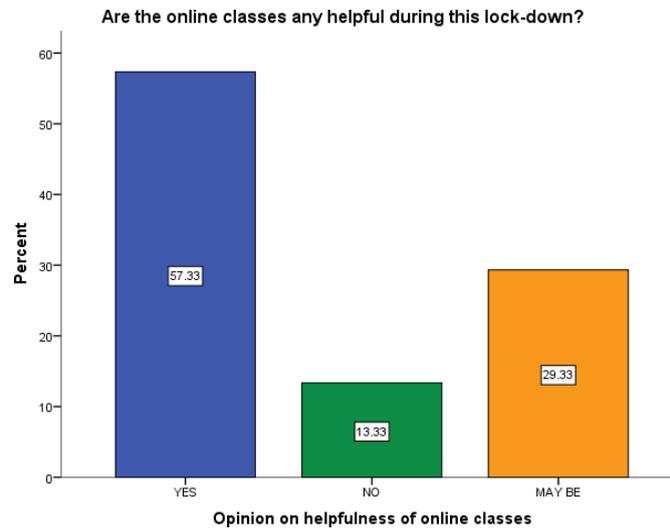


Figure 3: This bar graph represents the percentage of responses on the opinion about the helpfulness of the conduction of online classes. The X-axis represents the responses about the opinion on helpfulness of online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes may be the online classes were helpful. Most of the respondents (57.3%) replied that conduction of online classes are helpful.

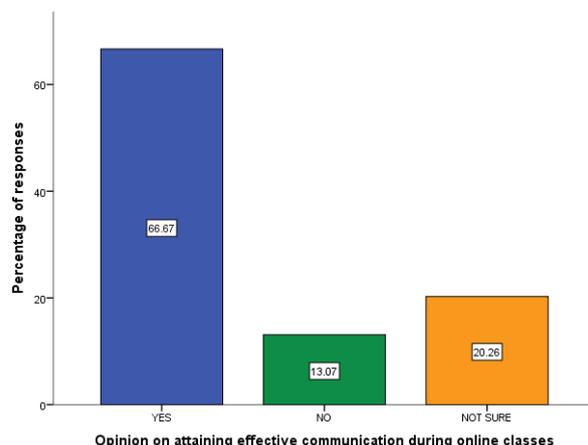


Figure 4: This bar graph represents the percentage of responses on their opinion about attaining effective communication during online classes. The X-axis represents the responses about the opinion on attaining effective communication during online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes not sure of the attainment of effective communication during online classes. Majority of the respondents (66.7%) replied that the communication during online classes is effective.

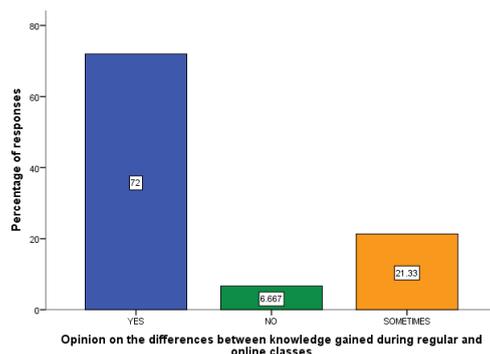


Figure 5: This bar graph represents the percentage of responses about the difference in knowledge gained from regular and online classes. The X-axis represents the responses about the opinion on differences between regular and online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes sometimes, there are differences between the online classes and regular classes. Majority of the respondents (72%) replied that the knowledge gained during regular and online classes are different.

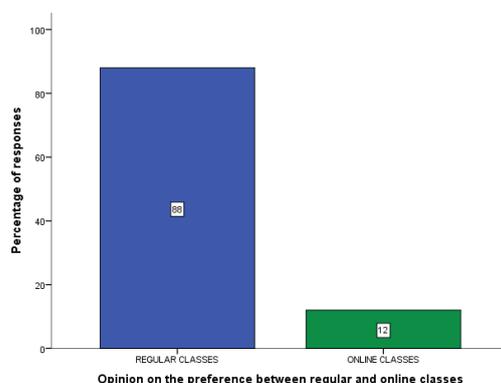


Figure 6: This bar graph represents the percentage of responses about their preference between regular classes and online classes. The X-axis represents the responses about the preference between regular and online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes

and green denotes no on respondents preference between regular and online classes. Most of the respondents (88%) prefer regular classes than online classes.

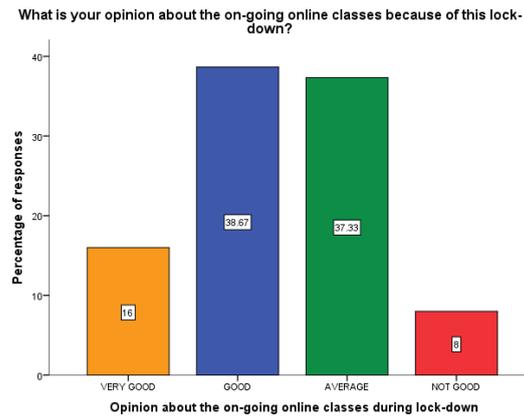


Figure 7: This bar graph represents the percentage of responses about their overall experience on online classes. The X-axis represents the responses about the total opinion on the on-going online classes and the Y-axis represents the percentage of responses of college students. Orange denotes very good, blue denotes good, green denotes average and red denotes not good, representing various opinions of the respondents. Majority of the respondents (38.6%) have the opinion that the online classes during the lockdown period are good.

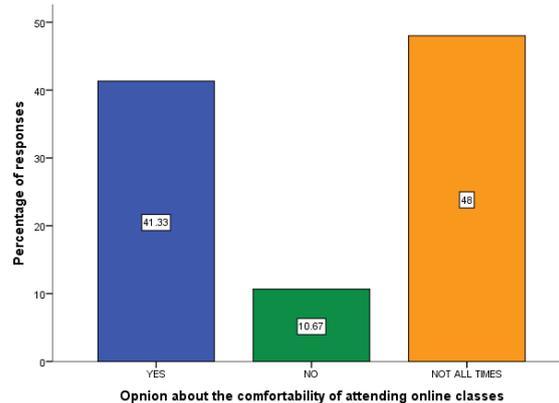


Figure 8: This bar graph represents the percentage of responses about their comfortness in attending online classes. The X-axis represents the responses about the comfort of attending online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes not all times that attending online classes are comfortable. Most of them (48%) replied that they have the opinion that attending online classes is not comfortable all the time.

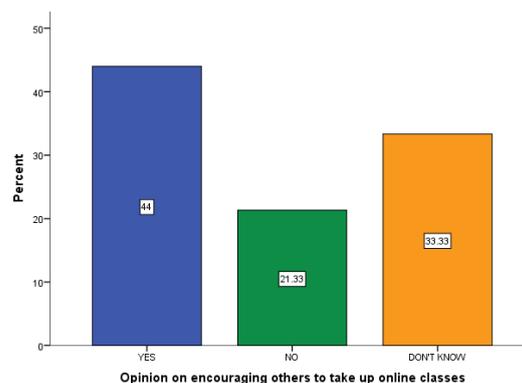


Figure 9: This bar graph represents the percentage of responses about the students whether they would encourage and recommend others to take up online classes. The X-axis represents the responses about the

opinion on encouraging others to attend online classes and the Y-axis represents the percentage of responses of college students. Blue denotes yes, green denotes no and orange denotes don't know that the respondents would encourage others to attend the classes. Most of the students (44%) replied as they will encourage others to attend online classes.

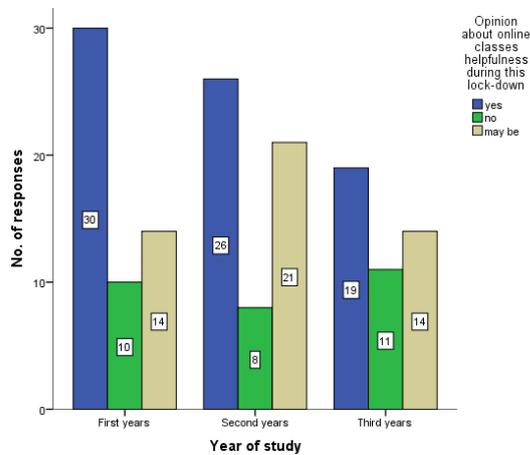


Figure 10: The bar graph depicts the association between the year of study with their opinion about the helpfulness of the online classes during COVID-19 lockdown. X-axis represents the year of study and Y-axis represents the number of responses. Blue denotes yes, green denotes no and beige denotes may be. Majority of the first year students (30 participants) have the opinion that the online classes are helpful. Pearson chi square test shows p value is 0.477 (>0.05). Hence it is not statistically significant, the differences in the opinion among the students of three years were statistically not significant.

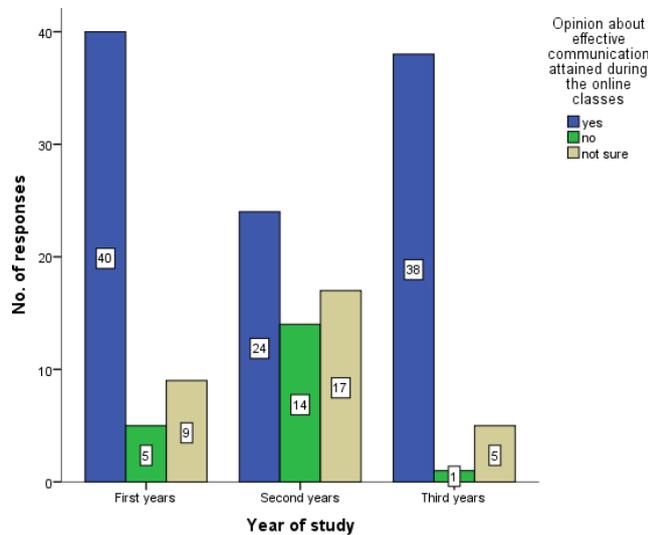


Figure 11: The bar graph depicts the association between the year of study of the respondents with their opinion about attaining effective communication during online classes in COVID-19 lockdown. X-axis represents the year of study and Y-axis represents the number of responses. Blue denotes yes, green denotes no and beige denotes not sure. Majority of the first year students (40 participants) were more satisfied with the communication attained during online classes. Pearson chi square test shows p value is 0.00 (<0.001), hence it is statistically significant, first year students are more satisfied with the online classes than other students.

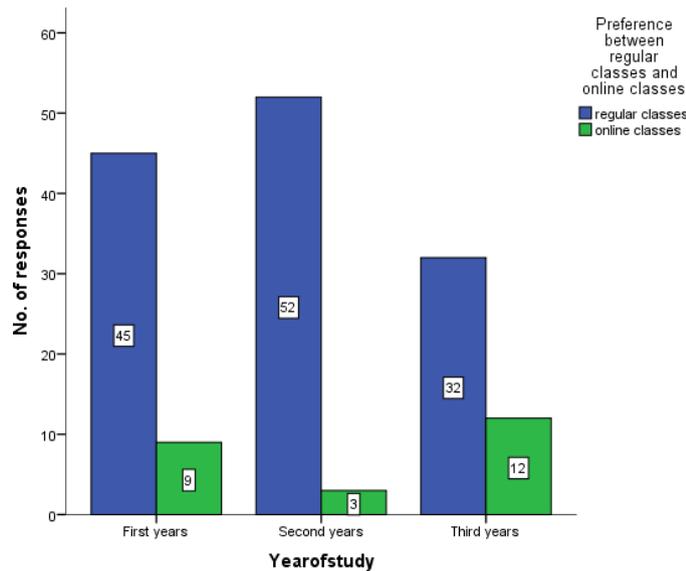


Figure 12: The bar graph depicts the association between the year of study of the respondents with their preference between regular and online classes. X-axis represents the year of study and Y-axis represents the number of responses. Blue denotes regular classes and green denotes online classes. Most of the second year students (52 participants) prefer regular classes than online classes. Pearson chi square test shows p value is 0.012 (<0.05). Hence it is statistically significant, the preference towards regular classes than online classes is more among second year students than the other year students.

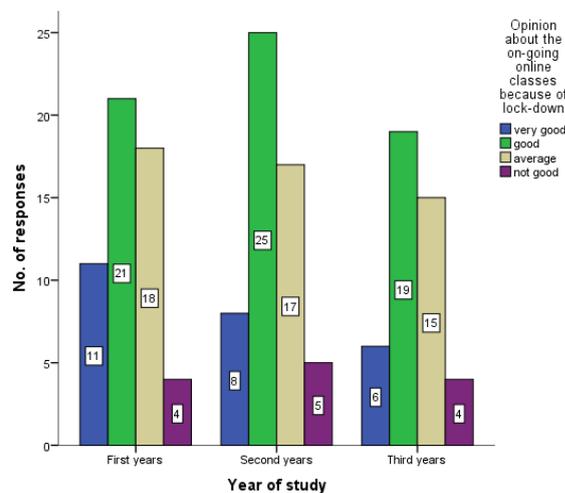


Figure 13: The bar graph depicts the association between the year of study of the respondents with their opinion about the on-going online classes during COVID-19 lockdown. X-axis represents the year of study and Y-axis represents the number of responses. Blue denotes very good, green denotes good, beige denotes average and purple denotes poor. Majority of the second year students (25 participants) responded to the online classes as good and majority of the first year students (11 participants) responded as the online classes were very good. Pearson chi square test shows p value is 0.970 (>0.05), hence it is statistically not significant, the difference in opinion among the students is statistically not significant.