

Impact of Flipped & Virtual Learning Modes on Pharma Education

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Abstract

The Internet of Things (IoT) or Eye Tracking Knowledge (ETK) has a major impact on educational institutions. Education institutions are adopting the IoT ecosystem and implementing a variety of strategies, like augmented reality and cloud computing. While the corona virus has had a global influence on education and the education-based sector, it is commonly accepted that until the corona virus is eradicated, drastic adjustments in the education sector are needed. The economy has been the most affected by Lockdown, but we cannot ignore the influence on education, as the traditional education that Lockdown provided to students has now been completely shut down someplace. Online education has now become a vital aspect of the education system in the modern world because of modern scientific and technical advancements. Prior to the Covid-19, however, online education in the most region of India was implementing continuously but it became mandatory due to the havoc of pandemic. Meanwhile, there are difficulties and challenges have been facing higher education sectors, notably in Uttarakhand universities, in successfully sustaining online education. Considering this, present study aims to supply insight into the influence of Covid-19 on the teaching and learning processes of Pharmacy students. According to the findings of the study, the academic institution met multiple issues in terms of digital platform, problems with practical tests administered via online mode, evaluation, examination etc. Authors are concluding the relation between the IOTs aided online and flipped classroom when university resumed. Certainly, this analysis guides us for the future preparation related to such adverse condition in education system.

Keywords: Internet of Things, Covid-19, virtual learning, evaluation, lockdown

1.Introduction

Today's scorching matter in the worldwide are IOT (Internet of Things); is a system of wireless, interrelated, and connected digital devices that can collect, send, and store data over a network without requiring human-to-human or human-to-computer interaction. In the period of COVID-19 pandemic these two express their potential in favor of humanity and economy sustainment. Therefore, pharmacy education is not being so far of the influence of IOTs. Opting of the online classes' mode, it directly connected to IOTs. Education of Pharmacy is the broad area of intellectual in which aspects related to the drug either synthetically or natural occurring have been covering through the PCI (Pharmacy Council of India) curriculum. Till date all over world suffering from the life-threatening pandemic pronounced as COVID-19 caused by corona virus. There are strains have been found for the same and searching as onwards. In the recent years everyone gets affected by the lethal consequences. People have been lost their lives, jobs, residences, and convenience of education. Pharmacy era either as industrial aspects or academic aspects equally influenced by the COVID-19 pandemic. Since 2019, Our national education system was opting the online mode of education gradually as per requirements and feasibility; however, it was being mandatory to all era of education. It is not considerable that the education suffered due to any kind of circumstances even pandemic. To overcome the loss of education, all education institutes had been opted online mode of education. As the education connected with the internet, thus we can call it as IOT (internet of things) based education. As there are various challenges in front of us to apply the online education in the pharmacy; beyond that "something is better than nothing principle" are followed. There are few points which make the online mode favors of students.[1]

- It is safe during the pandemic
- It is easy to access by students
- We can minimize the loss of education
- Economically favor the country
- Students get more interaction with worldwide

Barriers is always there in the way of new things and the solution always be there.

- Lack of interaction among the students and teachers
- Network issues leads the connectivity issues
- Stress in eyes leads visual disturbances
- Lack of practical based knowledge.

2. Materials and methods

The purpose of the research is to set up correlation among the students and mode of education in the recent time, which influenced the student's potential either in present or future. Responses saw of students during online and offline mode of education. This online cross-sectional study was conducted among 210 Bachelor of Pharmacy students from the Uttarakhand University between the starting of January and end of February 2022. These students further took part in the offline study when offline classes resumed from march onwards. All the semesters were included for this study. This study was a part of a larger study that focused on the impact of COVID-19 on the mental health and physical activity of undergraduate pharmacy students at the Uttarakhand University. An online questionnaire was circulated because physical data collection was not possible due to the limitations caused by COVID-19. This study focuses on the challenges confronted by the students, academic and administrative staff of the Uttarakhand University of Uttarakhand-Dehradun, enounced university in India during Covid-19 pandemic. It is a qualitative as well as quantitative study with the limited significant parameters. A questionnaire survey, informal discussions and formal interviews with relevant stakeholders including lecturers, administrators and students were conducted during the online classes. Figure 1 The google form and analyzing tool were employed to obtain data. The contextual information was collected from authentic websites, research articles and official reports.[2]

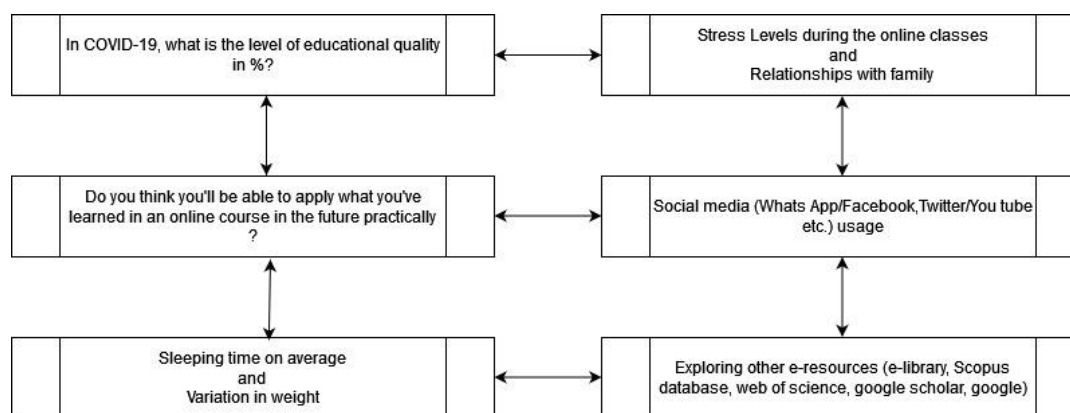


Figure 1. Parameters Analyzed of B. Pharm Students During Virtual Education

Online mode for the students initially conducted by ERP (Enterprise Resource Planning) through the LMS (Learning Management System), But not working efficiently. Later, MS Team was gotten in favor of students' upliftment. These classes showed in the later as OMC. Academics from faculties took part in online teaching and learning. Although there were difficulties involved in the teaching and learning process via online, the university took tangible measures to implement the online education system. Figure 2

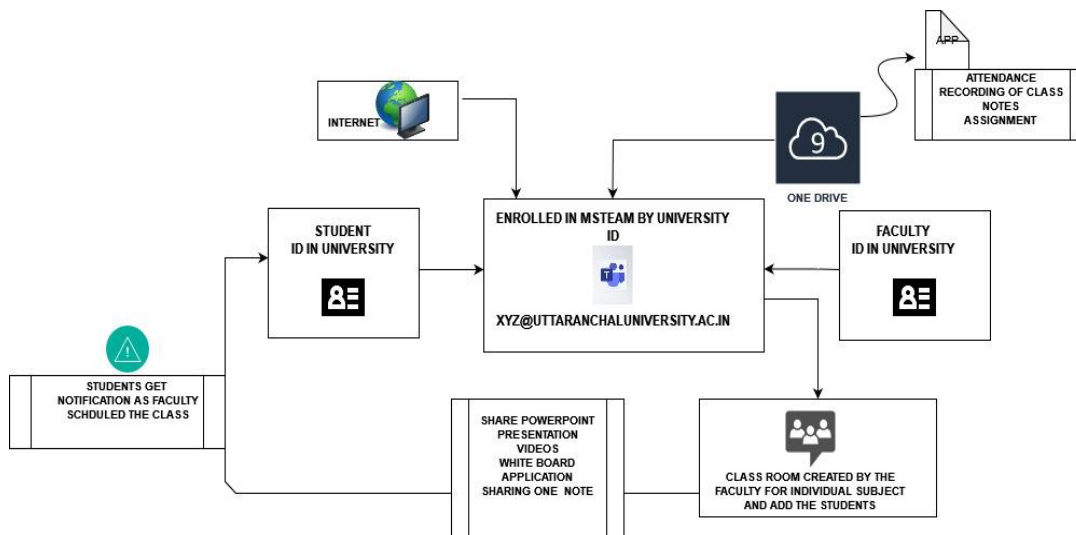


Figure 2: Procedure of The Online Classes' Execution Through MS- Team Platform

As the classes resume in university after notification of government, flipped classes has been scheduling over there. Later it will be showed as FC. Figure 3.

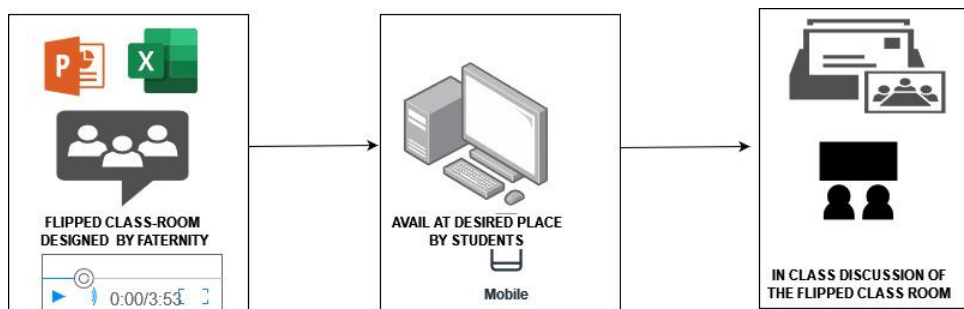


Figure 3: Procedure of The Flipped Classes' Execution

3.Results and discussion

1. How much % knowledge students grasping through the different mode of classes.

Grasping of knowledge %		25	50	75	100
OMC	No. of students	40	80	63	27
FC	No. of students	15	18	42	135

Measurement of grasping knowledge was considered in terms of percentage, wherever 100% for the highly grasping and 25 % showed low grasping potential. Response in relation of this questionnaires, only twenty-seven out of 210 students responded in terms of 100 % which were very unexpected during the survey. 3/4th of the students were fully convinced that FC supplying the efficient knowledge. Figure 4.

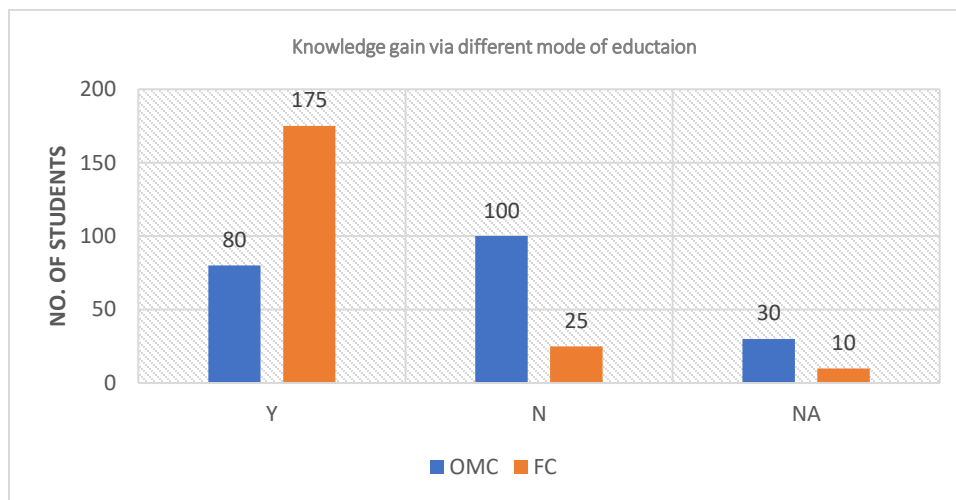


Figure 4: Knowledge Gain Via Different Mode of Education

The result revealed that the largest students were unable to clear their logics and problems through OMC, because the curriculum based on experiments. They confronted their issues like poor network connectivity, financial issues, complexity of topic and lack of interaction. B. Pharmacy curriculum is enriched with the courses like pharmaceutical chemistry, pharmaceutics, pharmacology, pharmacognosy and the elective subjects. First year’s students were suffered by this problem because everything was new and complexing for them. Online mode supplies the facility to instruct the students virtually but realistic experience different. They cannot assume the calibration, prescription, assay, biochemical investigation by virtually. Exposure of the experiments raised the quality of education. That is the reason, why students did not connect themselves with online mode of education. On the other side of the coin, FC supplies the same E-content like OMC, but student-fraternity interaction makes them interesting and intellectual.[3]

2. Do you agree by this statement that “The productivity of the current knowledge will be fruitful in the long term”?

Applicability of knowledge in future aspects (%)		Y	N	NA
Statement of students				
OMC	No. of students	80	100	30
FC	No. of students	175	25	10

Relevant to this question only eighty students expressed their credibility in the OMC. Although thirty-eight students did not express their view about this. FC classes dragged the student more than 170 in favor of that grasping knowledge certainly helped him to carrier development. Figure 5.

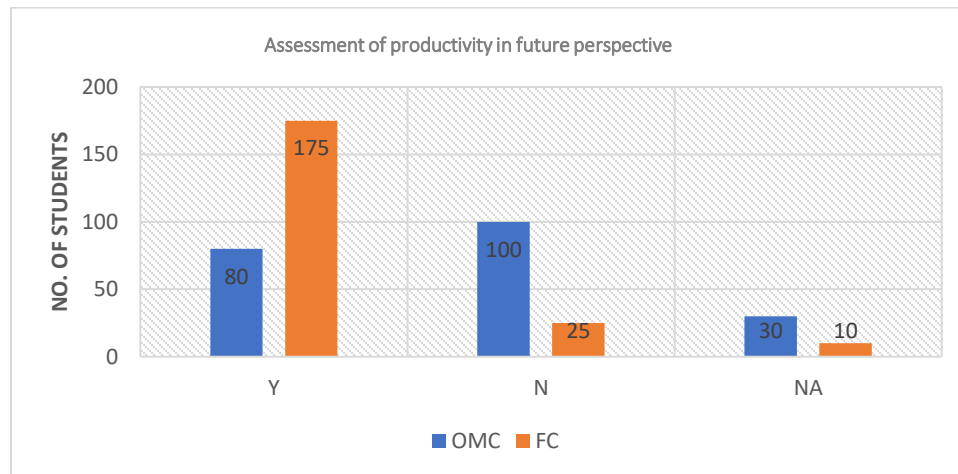


Figure 5: Assessment of Productivity in Future Perspective

It is really question of concern that why the students detached from the education which help them in future progress, because sometime OMC is the last or least choice for the communication between the learner and teacher. Students expressed their trust on the FC because an interaction make the things easier and simple.

3. Do you suffer weight variation during online mode of education?

Monitoring of Weight variation →		Gain	Loss	NA
OMC	No. of students	99	41	70
FC	No. of students	30	40	140

During the Covid-19, 46.7 % of students were claimed for fattiness; however, 20.1 % students were seen the loss of weight in comparison of normal circumstances. Although, seventy students did not express their statement about this. Classes done by FC, students get engaged their routine activity and extracurricular classes in university which them make more healthy and mental fit. Figure 6.

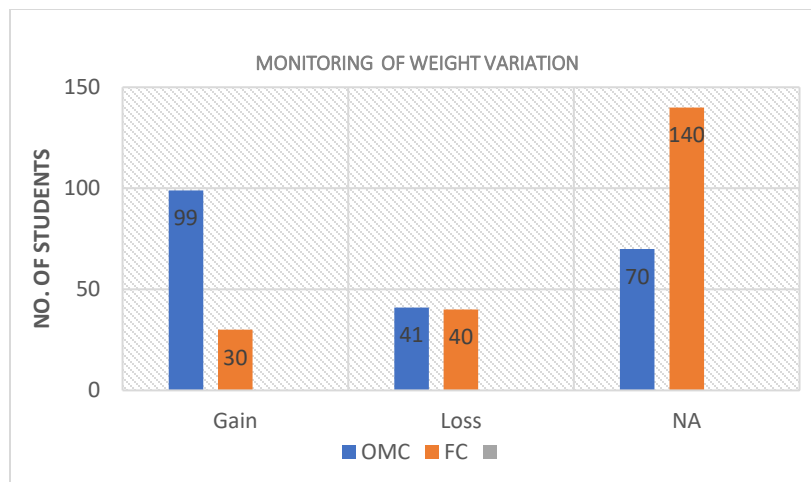
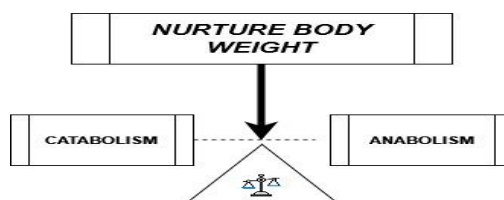


Figure 6. Monitoring of Weight Variation

Our health leads our life process, completely depend upon the food habit. Our body clock (sleep wake rhythm) regulated through nature clock which is called circadian rhythm i.e., expression of the changes in physical, mental, and behavioural activity in a day.



During the online classes, students lead the lack of physical activity, occurrence of imbalanced metabolism. Irregularity of circadian rhythm causes either positive energy or negative energy balance. Those students gone through the more intake and less expenditure, had weight gain and vice versa.[4]

4. How much do you feel psychological pressure during OMC and FC?

Psychological pressure during classes		High	Moderate	Tolerable
OMC	No. of students	60	120	30
FC	No. of students	30	25	155

It was the serious issues that only less than 30 students were able to continue their study under the different mode of education. Approximately 3/4th students had felt them under the umbrella of stress or psychological pressure. Although there are forty students who felt the severe psychological pressure on them; leads the depression, anxiety, and other manifestation. In case of

FC, Largest students agreed that even they are suffering from the psychological pressure, but it is tolerable for them. It can be revealed that our environment of working influences us Way of thinking.[5] Figure 7.

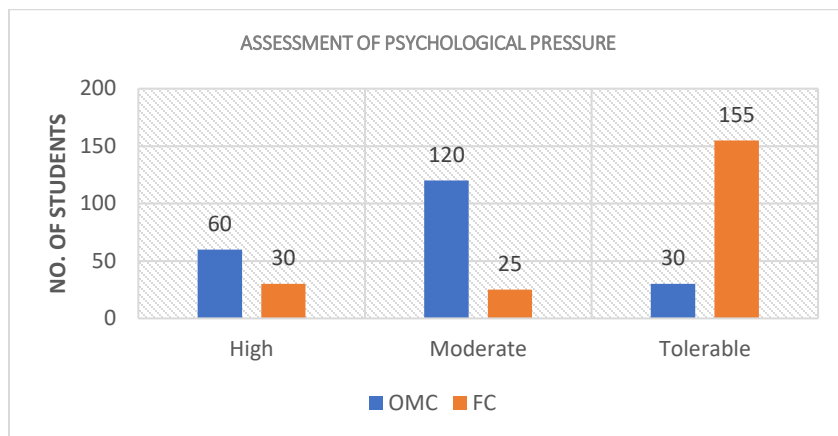


Figure 7. Assessment of Psychological Pressure

All students develop their way of learning, remembering and delivery methods of their knowledge. Responses reveals that in the different circumstance of teaching delivery method directly affect their acceptance of the concept, expression, and mood behaviour. They are anxious about their forthcoming consequence which leads after this excruciating condition. That is occurring because largest subjects deal with the dual feature i.e., theoretical as well as experimental. It can be visual appearance of the chemical, instrumentation, synthesis, evaluation of formulation in online mode, however students might be completely satisfied with the logics. Students of third and fourth years had anxiety related to their future because these semesters are the block building of carrier. Industrial tour, chem-draw software, formulation of dosage forms in the curriculum. Endorphins or happiness booster produced by our nervous system which helps to minimize the pain and stress in certain circumstances. Compassion with family associated with the production of endorphins which lead to decision making and positiveness in the life under the umbrella of adverse conditions like COVID-19 pandemic. During the FC, there are using both e-content and the explanation by fraternity.

- Do you find yourself more engaged towards the various platform of social media like Facebook, You tube, Instagram, twitter?

Engagement with social media		>4hrs	<4hrs	NA
OMC	No. of students	140	66	4
FC	No. of students	60	120	30

6 hrs. are maximum time for the teaching during online classes. Besides that, students were engaged with the other social network, however more than one hundred students had completely indulged them in the social network more than 4 hrs. There is very less ratio of the students who ignored the question. During the FC, students engaged with their subjects which them less engaged to the social network. Figure 8.

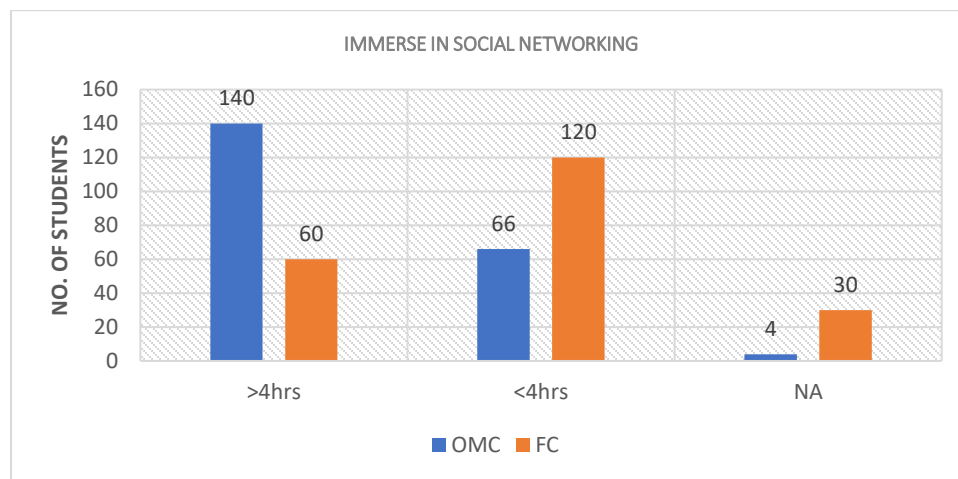


Figure 8. Immersion in Social Networking

Our body needs sleep at least 8hrs in a day to detoxify of toxic material from our body. UV radiation through electronic devise mode of online classes influences our body clock. Students go through the opposite of nature clock by which their body clock cannot synchronize with them to regulate the body activities. Misaligned of circadian rhythm and body clock consequences are circadian rhythm disorder i.e., jet lag disorder, shift work disorder, insomnia, excessive day time sleepiness. More than 97 % students completely depend on the e resource either in form of entertainment or availing academic achievement. Such synchronization makes us alone, leads the psychological disorders. [6]

6. Do you think that during online education practical knowledge suffers?

Mode of education influences the practical knowledge		Agree	Disagree	NA
OMC	No. of students (%)	52.8	14.4	4.4
	No. of students	131	30	1
	No. of students	185	15	10

During the Covid-19, 28.4 % of students was being strongly convinced that they are lacking the basic practical knowledge for the subject. Half of the students were agreed that they had not gotten the practical based knowledge during the online mode. 14.4% students were resisted that no impact affected by the online mode education.

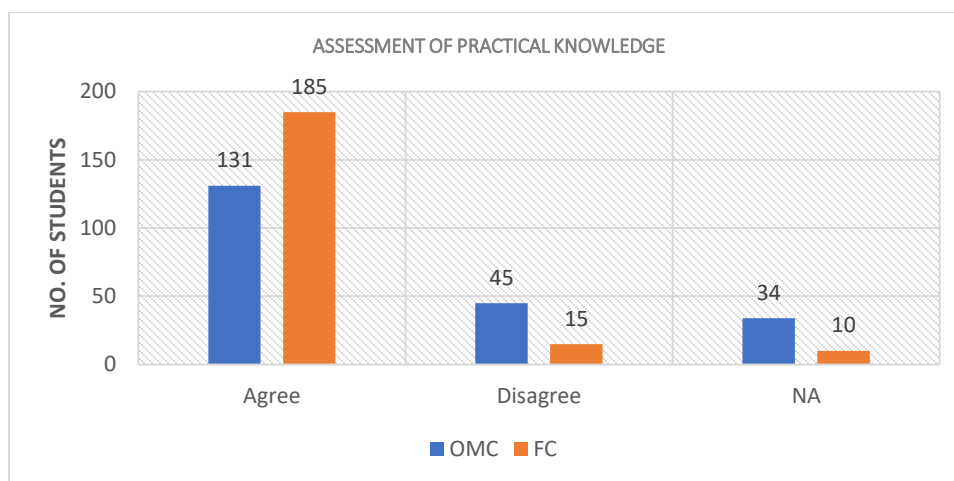


Figure 9. Impact on Practical Knowledge

$\frac{3}{4}$ students were agreed the statement that this mode sending the lack of practical knowledge. Maximum of Freshers students of B. Pharm are pass out of 12th where the experimental knowledge does not provide in such mode. It is the time where students clear their doubt by doing experiments, may be in analysis, human anatomy, and physiology, pharmaceutical preparation. when the students do their experiments in lab, they know how we remove the sources of errors, enhanced the accuracy and precision. Students cannot imagine the cutting and section of plant sample.[7]

Conclusion

First question is noticed that what is need of online education. Need is directory correlated with the demand of the circumstances. Mortality and morbidity rate due to COVID-19 are increasing continuously. Somehow to overcome the loss of education due to COVID-19 pandemic, online line mode was opted by the universities and institutions. Pharmacy program is interdisciplinary in which theoretical as well as experimental aspects covered equally of various subjects. Theoretically aspects always associated with the experimental fact and resolved so on. Memorizing and learning stamina is the parameter which helps the students express their knowledge either orally or written exam. During online classes different issues raises i.e., the students do not able to connect them in the topic due to network issues, lack of concentration and environment and interaction issues. On the survey only 12.8 % students agreed that they have been

achieving 100% quality education. more than 48% students of them are sure that it will mark successfully in the carrier aspects. Rest of the students did not express their view in favor of quality education. University have been organizing the various events in form of sports, cultural as well as in personality development. But all these co-curricular activities lacked during the online education which result weight imbalance of students. Students were going through the e-resources use either in terms of searching of the new topic, advanced technology. Mostly students are passing through adult age and belonging from the other state beyond the Uttarakhand, therefore interaction between students and other members was lacking due to offline classes. This online education keeps them together and increase closeness which is a positive sign towards the relation. The most unwanted drawback with online education that students go through the negative aspects and indulged them for beyond the limit which are leading visual disturbances, migraine, and casual behavior in life. Practical knowledge always shows a profound impact on the leadership, managing of problems, innovation. but students lacking this which lead insufficiency of them. Now the topic of concern is that how can we overcome that loss of knowledge in our students. Children requiring special learning services, those living in poverty. There should be designed the capsule program for the students through they connected themselves to the tardy curriculum.

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