Original Research Article

Pedagogical Challenges and Opportunities during COVID-19 Pandemic: Perspectives from the Prospective Teachers and Teacher Educators

Rajkumar Nanaware [1], Neha Sharma[2], and Rajkumar Nanaware[2*]

[1]Asst Prof. Dept of PG Studies in Education and Research, R V Teachers College (IASE), Bangalore, Karnataka, India
[2]PG Student, Dept of PG Studies in Education and Research, R V Teachers College (IASE), Bangalore, Karnataka, India

Abstract

The present quantitative survey study comprising primary source of data conducted in southern state of India during the first wave and first quarter of COVID-19 pandemic to investigate the Teacher Educators' and Prospective Teachers' presuppositions, beliefs, and emotions on the sudden switch on to the online mode of teaching. During the precautionary lockdown, everything came to a halt and the education sector was not an exception and could not be separated. It looked initially the teachers themselves appeared apprehensive about the platforms and techniques of online teaching. It was the biggest challenge for the teachers to convince themselves first and get on to the job. The sole idea was not only to compare the two different ways of teaching (online and face to face) but also to investigate the lessons learnt by Teacher Educators and Teacher Trainees in this regard and its implications to higher education pedagogy along with the administrative and tech-savvy skills.An Opinionnaire comprising two sets each for prospective teachers and teacher educators were designed and data collected through online from 144 Prospective Teachers and Teacher Educators based on emotions, their motives for participation in the academic vis-a-vis curricular programs and the support system provided by the Management in Teaching-Learning Processes.The analysis indicated that the virtual mode successfully helped all teacher educators and prospective teachers to improve upon and transform online teaching into interactive TLP and expected learning outcome-based teaching through various online platforms during COVID-19 pandemic.

Keywords: Andragogy, Online Learning, COVID-19 Pandemic, Interactive Teaching learning Process, Expected Learning Outcomes.

1. INTRODUCTION

Corona virus disease 2019 (COVID-19) is a life-threatening illness caused by a virus now called 'Severe Acute Respiratory Syndrome Corona Virus 2' (SARS-CoV-2; formerly called COVID-19), which was first identified amid an eruption of respiratory contagion cases in Wuhan City, China. It was reported first to the WHO on 31 December 2019. On January 30, 2020, the WHO publicized the COVID-19 epidemic a global health emergency. The WHO declared COVID-19 a global pandemic on March 11, 2020, its first such designation since announcing H1N1 influenza a pandemic in 2009. Sickness caused by SARS-CoV-2 was termed as COVID-19 by the WHO, the acronym derived from "coronavirus disease 2019." the COVID-19 has become a pandemic in a short of span of 3 months, spreading over 180 + countries and territories, infecting more than a million population and taking thousands of lives in its first quarter. According to the UNESCO's report, it had severely affected the student population during mid-April 2020. As of May 8th,

2020, in India, 56,342 positive cases were reported, more than 1.34 billion will have difficulty in controlling the transmission of 'Severe Acute Respiratory Syndrome Corona Virus 2' among its population. The Government of India implemented a 55-days lockdown on March 25th, 2020, throughout the country to reduce the transmission of the virus. This outbreak is inseparably linked to the economy of the nation, as it has dramatically hampered industrial and educational sectors because people worldwide are prudently engaging in business in the affected regions and educational institutions were ultimately shut for unlimited time. Since the starting of the outbreak, scientists all over the world have tried to investigate the strategies for obtaining the optimal severity and duration of lockdown measures. The decision to begin or to end a lockdown may become a very tense situation trade-off between the economic survival of a country and the saving of lives. Following the worsening COVID-19 situation in India, on 24 March 2020, Government enforced nationwide lockdown for 21

days, limiting movement of the entire 1.3 billion population as a preventive measure against the Covid 19 Pandemic.

Phases of Lockdown
It was ordered after a 14-hour voluntary public curfew on 22 March, followed by enforcement of a series of regulations in the country's COVID-19 affected regions.

Phase 1 (25 March – 14 April)
On the very first day of the lockdown on 25 March, nearly all services and factories were suspended.

Phase 2 (15 April – 3 May)
On 14 April, Govt. stretched the nationwide lockdown till 3 May, with a conditional relaxation promised after 20 April for the regions where the spread had been contained by then.

Phase 3 (4–17 May)
On 1 May, the Ministry of Home Affairs (MHA) and the Government of India (GoI) further dragged out the lockdown period to two weeks apart from 4 May, with some relaxations. The country has been divided into 3 zones: red zones (130 districts), orange zones (284 districts) and green zones (320 districts).

Phase 4 (18–31 May)
On 17 May, the Ministry of Home Affairs (MHA) and the National Disaster Management Authority (NDMA) extended the lockdown beyond 18 May, with additional relaxations. Unlike the earlier extensions, states were given a larger say in the separation of green, orange, and red zones and the implementation roadmap. The fresh guidelines issued by the MHA for the month of June, stating that the phases of reopening would have more focus on the economy of the country.

Unlock 1.0 (1–30 June)
Lockdown restrictions were only to be enacted in containment zones, while activities were permitted in other zones in a phased manner. The Covid-induced lockdown devastated the education system with schools closing and online learning nowhere near effective. India is not fully equipped to meet the digital challenges and make education reach all corners of the nation via digital platforms. The Data showed over 1.5 million schools across India closed due to the pandemic, only 24 percent households have access to the internet, according to the 2019 government survey. In rural India, situation is worst, the numbers are as low as only 4 percent households having access to Uninterrupted Internet Services.

To fight back the disruption and damage, educational institutes across the country embraced the digital mode of education as a solution to fill the vacuum created by classroom teaching. With this, the hitherto peripheral digital education in India came center stage and is now increasingly getting integrated into the mainstream. The Indian Govt. and different stakeholders of education have investigated the possibility of Open and Distance learning (ODL) by adopting various digital technologies to cope up with the present crisis of COVID-19. The National Education Policy, released by the Union government in July, has also emphasized the importance of online education, blended with the traditional mode.

2. OBJECTIVES OF THE STUDY
The present research article focused on the following objectives:
- To assess the general preparedness of online teaching-learning process during COVID-19 pandemic
- To enlist various positive impacts of online teaching-learning process during COVID-19 pandemic.
- To find out negative impacts of online teaching during COVID-19 pandemic.
- To offer effective and constructive suggestions for continuing education during the COVID-19 pandemic.

3. METHODOLOGY
The present quantitative survey study comprising primary source of data conducted during the first wave and first quarter of COVID-19 pandemic in Karnataka state, the southern province of India to investigate the Teacher Educators and Prospective Teachers' presuppositions, beliefs and emotions on the sudden switch on to the online mode of teaching.

A close-ended questionnaire was prepared by the researcher. Primary data collected through Google Forms comprising two sets each for prospective teachers and teacher educators was designed and data collected through online from 144 Prospective Teachers and Teacher Educators based on emotions, their motives for participation in the academic vis-a-vis curricular programs and the support system provided by the Management in Teaching-Learning Processes.

4. RESULTS AND FINDINGS
The following sections elaborate the major categories which emerged from the findings.

Descriptive
4.1.   Respondents' Demographic Profile
The analysis is based on a tool in terms of the feedback received through Google Form from the respondents (Prospective Teachers and Teacher Educators) on a duel set of questionnaires prepared each for prospective teachers and teacher educators till 7th of August 2020, based on emotions, their motives

for participation in the academic vis-a-vis curricular programs and the support system provided by the Management in Teaching-Learning Processes.

Their percent wise division is as follows
(i) Type of Institution
 Aided / Govt: 104 (72.2%)
 Unaided/ Private: 37(25.7%)
 Autonomous: 3 (2.1%)
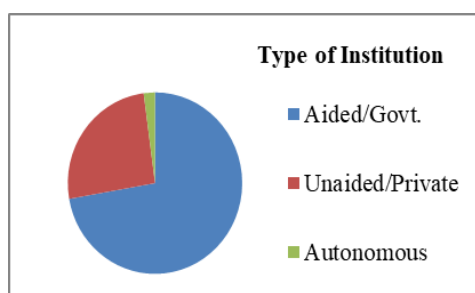
(ii) Locale
Urban – 129 (87.2%)
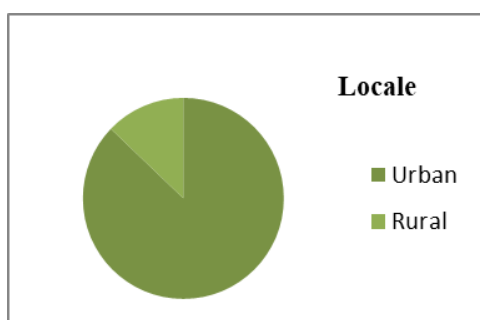Rural – 29 (12.8%)

Fig-1: Type of Institution

Fig-2: Locality of Respondents

(ii) Gender
 Male: 48 (31.8%)
 Female: 103 (68.3%)

(iv) Respondent Category
Teacher Educators: 62 (40.8%)
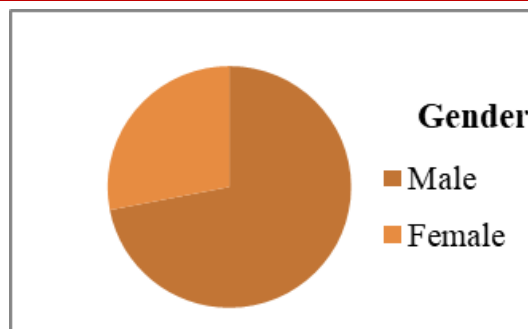Teacher Trainees: 90 (59.2%)
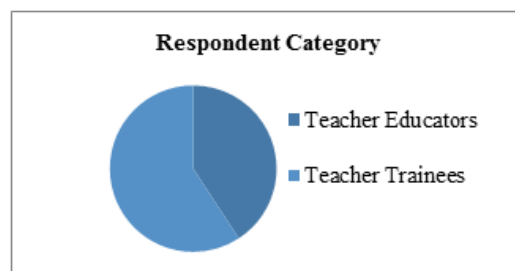

Fig-3: Gender

Fig-4: Category of Respondents

4.2. The platforms/application/tools being used for online classes

 The respondents were asked to select the online platform(s) that you are using for online classes. It was noticed that the respondents found using everything; from Google-classrooms to zoom, to Microsoft Teams, to skype, to WhatsApp groups, for interactive sessions. However, Zooms and Google classrooms are the most preferred platforms, whereas WhatsApp groups too are popular for sharing recorded lectures and keeping in touch with the students. For lectures and content dissemination, a mix of PPTs, pdf's, video recordings and soft copies of all required course materials. The faculties and students used almost all the platforms as per convenient and on the guidelines of the tutors and availability of recharge packs and power supply are using all means to keep connected with the students, to keep them engaged, and to transfer as much knowledge as possible under the current circumstances.
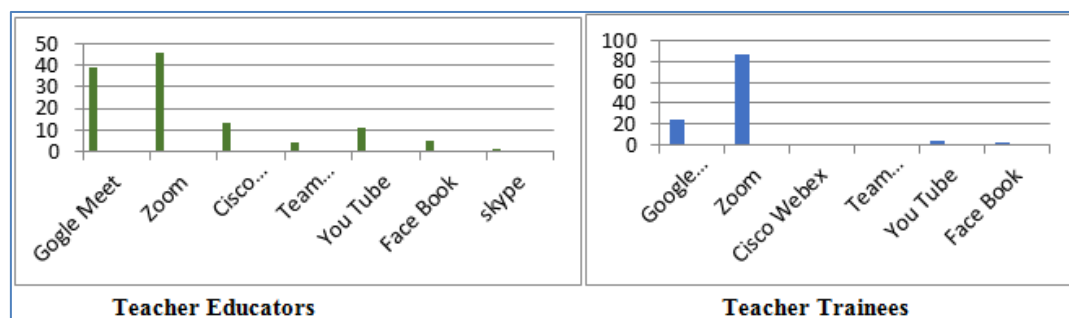

Fig-5: The platforms/application/tools being used for online classes

4.3. The Electronic Gadget being used for online classes

Our main concern is to keep the students engaged and to provide a learning environment that is not cold and isolated. Therefore, our first instinct was to make sure that the students can see their faculty and know that their teachers are available for them; and secondly, we wanted their attention, focus, and interest. With these objectives, the teachers are:

1. Using online apps and electronic gadgets to connect with the students visually

2. Adopting the idea of 'gamification' and incorporating more online activities.
3. Trying the concept of the "flipped classroom" and encouraging students to lead discussions of specific topics.
4. Implementing the concept of 'self-learning' and promoting it, i.e., encouraging students to explore their areas of interest and sharing in the online class.
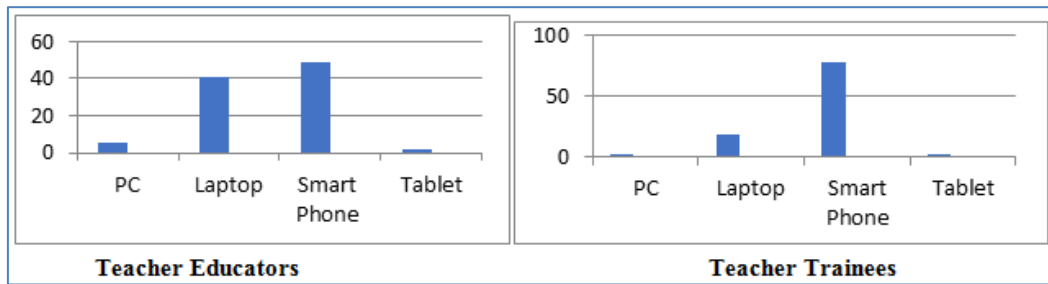

Fig-6: The Electronic Gadget being used for online classes

Majority of Teacher Educators and Trainees found using Laptop and Smart phones as their first choice. Other than that, Lectures; discussions; keeping the students engaged by using a mix of learning tools and provision of required course-relevant e-resources are ensured. The main focus is on 'active learning', which is comparatively way easy in face-to-face interactive environment letting the students lead the discussion, motivate them to think about their skills and knowledgebase via self-reflection journey and work toward their clearly defined goals.

4.4. First Reaction on Closure of Institution due to Lockdown

When the closure of college was announced (Lockdown) due to the pandemic COVID-19. what was your immediate reaction?

Table-1: First Reaction on Closure of Institution due to Lockdown

Sl. No.	Responses	Teacher Educator						Teacher Trainee					
		SD	D	U	A	SA	Total	SD	D	U	A	SA	Total
1.	I believed that it would be temporary, like for a week or two.	8	12	5	20	17	**62**	08	07	05	24	27	**71**
2.	Fear and Anxiety about when and how studies will be completed and the possibility of non-continuation of studies	10	16	06	15	12	**59**	04	08	06	25	22	**65**
3.	Joy and relief as the classes are not being held.	22	20	8	8	3	**61**	21	21	08	04	00	**54**
4.	Indifference, because it did not bother me	22	14	09	09	06	**60**	15	15	14	02	01	**47**

According to the calculated data the investigator found that 60% of teacher educators and 72% of teacher trainees believed that college would be closed temporarily and would open after one or two weeks. At the same time 32% of teacher educators and 21% teacher trainees disagree with the statement and believed that it would be for longer time period. There are 46% teacher educators, and 72% teacher trainees were worried about the completion of course and they felt that the course might be discontinued but simultaneously 44% teacher educators and 18% teacher trainees were not worried about it. In the third statement 18% teacher educators and 7% teacher trainees were happy about the closure of the classes but at the same time 69% teacher educators and 78% teacher trainees were feeling downhearted about the classes are not being held. 60% of teacher educators and 64% of teacher trainees were bothered about the closure of the college and 25% teacher educators and 6% teacher trainees did not bother about it.
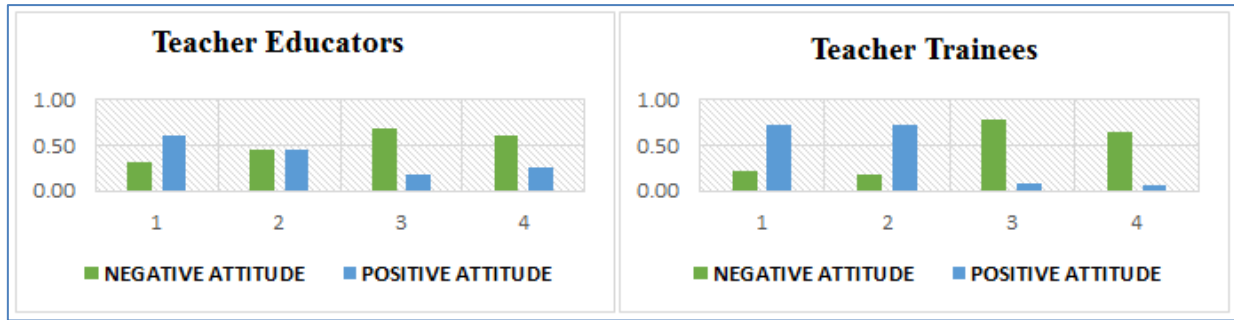
Fig-7: First Reaction on Closure of Institution due to Lockdown.

4.5. Elements of regular teaching which are missing in online teaching.

Table-2: Missing Elements of Teaching-Learning Process

Sl. No.	Responses	Teacher Educator						Teacher Trainee					
		SD	D	U	A	SA	Total	SD	D	U	A	SA	Total
1.	Live communication during the lesson.	08	11	00	17	25	**51**	07	05	07	20	33	**72**
2.	Social interaction.	07	12	02	13	27	**61**	02	06	09	22	24	**63**
3.	Fellow Teachers and Students	06	08	02	20	25	**61**	03	06	05	17	24	**55**
4.	Classrooms, Laboratories and Library.	06	05	05	16	29	**61**	03	07	07	18	30	**65**

There are few things that can be possible in the regular classroom and students as well as teachers always miss those activities in online instructions. As per the data the researcher found that 82% teacher educators and 74% teacher trainees missed the live communication during the lesson though 37% teacher educators and 17% teacher trainees did not feel like that.

Social interaction is missing in online teaching and this statement was accepted by the 66% teacher educators and 73% teacher trainees whereas 31% of teacher educators and 13% teacher trainees felt that there is no need of social interaction.74% teacher educators and 75% teacher trainees agreed with the sentence that Fellow Teachers and Students are missing in online teaching simultaneously 23% teacher educators and 16% teacher trainees did not have same opinion. There are 74% teacher educators, and 74% teacher trainees were missing the classroom, laboratory, and library concurrently 18% teacher educators and 15% teacher trainees did not bother about all these.
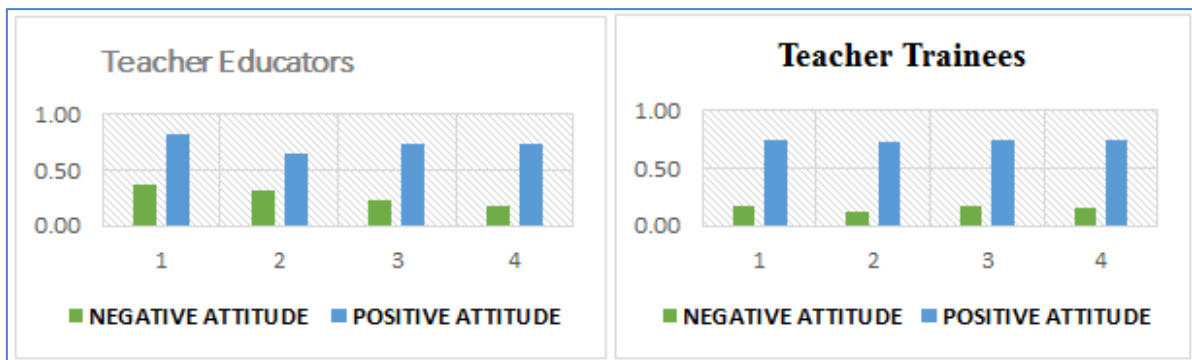

Fig-8: Missing Elements of Teaching-Learning Process

4.6. Challenges you are facing during your online classes

Table-3: Challenges faced during your online classes

Responses	Teacher Educator						Teacher Trainee					
	SD	D	U	A	SA	Total	SD	D	U	A	SA	Total
Participants Identification in Large Classroom Size. (TE) Not able to communicate with fellow colleagues (TT)	09	15	01	25	11	**61**	06	10	05	13	18	**52**
Disturbances due to background and participant's noise.	08	10	04	31	08	**61**	03	08	13	16	07	**47**
Data Packages, Data Exhaustion and Security Aspect of Personal Information.	06	13	03	27	12	**61**	03	14	13	12	06	**48**
Network issue/ Log in / Connectivity of App/Power Cuts	05	13	01	26	14	**59**	11	08	06	14	30	**69**

The challenges were facing in online classes by the teacher educators and teacher trainees were calculated by the investigator and it was revealed that 59% teacher educators and 60% teacher trainees were not able to communicate properly with their fellow mates at the same time 39% teacher educators and 31% teacher trainees were not feeling the same. There were disturbances due to background and participant's noise and this challenge is accepted by the 64% teacher educators and 49% teacher trainees whereas 30% teacher educators and 23% teacher trainees did not concern about the disturbances and background noise.

Data Packages, Data Exhaustion and Security Aspect of Personal Information, these are also a challenge in online classes. 64% teacher educators and 34% teacher trainees were accepted it, but 31% teacher educators and 35% teacher trainees were not agreed with this statement. 68% of teacher educators and 64% teacher trainees were accepted that there were Network issue/ Log in / Connectivity of App/Power Cuts at the same time 31% teacher educators and 28% teacher trainees did not experienced these issues.
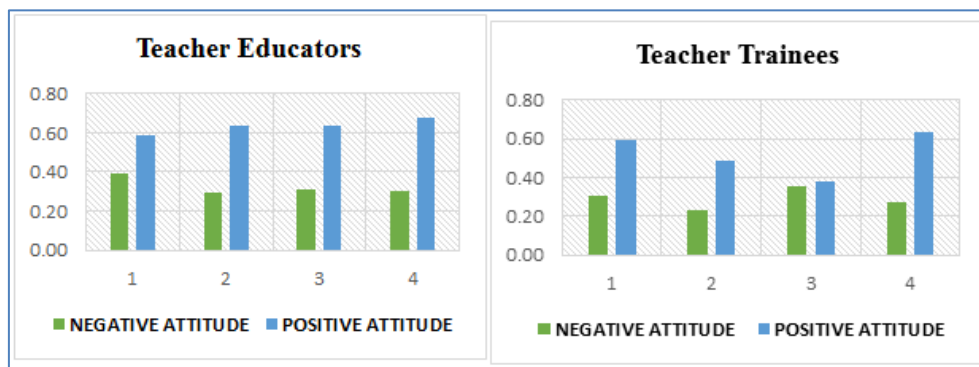

Fig-9: Challenges faced during your online classes

4.7. Negative aspects of online education compared to the usual context

Table-4: Negative aspects of online education compared to the usual context.

Responses	Teacher Educator						Teacher Trainee					
	SD	D	U	A	SA	Total	SD	D	U	A	SA	Total
Technical difficulties and too many hours in front of Electronic Gadgets.	09	08	04	27	13	**61**	11	01	02	15	51	**89**
Missing the Demonstrations, Laboratory and Practical's	05	10	03	24	18	**60**	03	01	00	07	70	**81**
Lack of personal Interaction	05	11	03	22	18	**59**	02	01	00	26	46	**75**
Non-Familiar with the Online Teaching and use of Electronic Gadgets	05	24	08	17	05	**59**	01	11	15	21	02	**50**

By calculating the percentage of collected data there were 66% teacher educators and 74% teacher trainees agreed that they have to spend many hours in front of electronic gadgets and also faced various technical difficulties but at the same time 28% teacher educators and 13% teacher trainees denied these issues.

In online education the demonstration, laboratory and practical works are missed out and 70% teacher educators and 90% teacher trainees agreed with

this whereas 25% teacher educators and 5% teacher trainees disagreed with this statement. 68% teacher educators and 96% teacher trainees felt that there was lack of personal interaction simultaneously 27% teacher educators and 4% teacher trainees did not feel the same. There were 37% teacher educators and 46% teacher trainees who were not familiar with the online teaching and use of electronic gadgets such as 49% teacher educators and 24% teacher trainees were familiar with it.
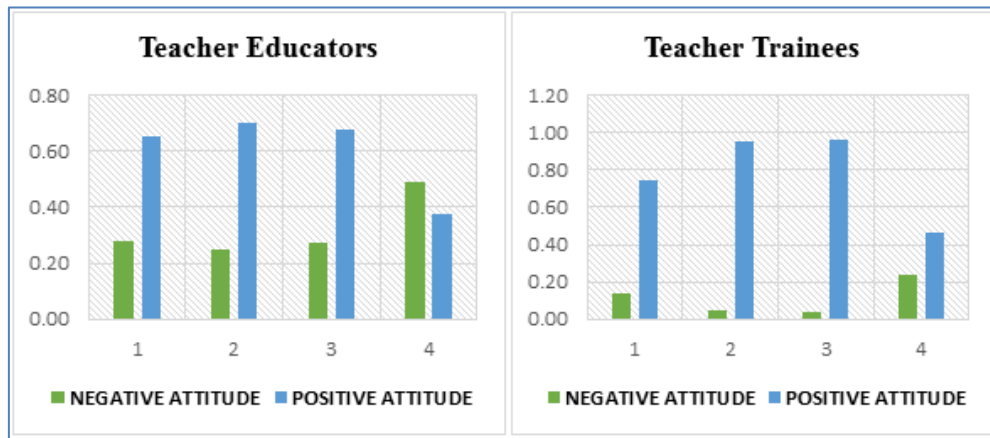

Fig-10: Negative aspects of online education compared to the usual context

4.8. Positive Aspects of online TLP

Converting to online teaching as well as online learning was the first-time experience for everyone and

thus issues are inevitable. Therefore, we asked both the teachers and the students, major issues, their opinion regarding online teaching-learning mode.

Table-6: Positive Aspects of online TLP

Responses	Teacher Educator						Teacher Trainee					
	SD	D	U	A	SA	Total	SD	D	U	A	SA	Total
Inclusion of Virtual Teaching Learning components in present courses.	00	02	00	06	46	**54**	03	02	00	24	28	**57**
Promoting virtual courses and development of MOOCS.	01	03	01	03	46	**54**	05	02	01	17	43	**68**
Conducting Online examinations.	24	18	00	4	13	**59**	03	03	15	18	24	**63**
Will Virtual Classes replace face to face learning in future?	42	01	00	02	08	**53**	00	01	00	28	31	**60**

In these findings the researcher wants to study about the positive aspects and opinion of teacher educators and teacher trainees regarding online teaching-learning mode. The collected data is calculated by the researcher and found that 96% teacher educators and 91% teacher trainees agree with the opinion that there should be inclusion of virtual teaching-learning components in present courses. About 4% teacher educators and 9% teacher trainees disregard the opinion. In the second opinion 91% teacher educators and 88% teacher trainees promoted the virtual courses and development of MOOCs although 7% teacher educators and 10% teacher trainees did not agree with

this and not in the favor of promoting the virtual courses.

Conducting online examination is appropriate, this was accepted by the 29% teacher educators and 67% teacher trainees in the other hand 71% teacher educators and 10% teacher trainees did not go with this statement. In the comparison of virtual classes and face to face learning for the future 19% teacher educators and 98% teacher trainees agreed that face to face learning will be replaced by the virtual classes in future at the same time 81% teacher educators and 2% teacher trainees disagreed the opinion.
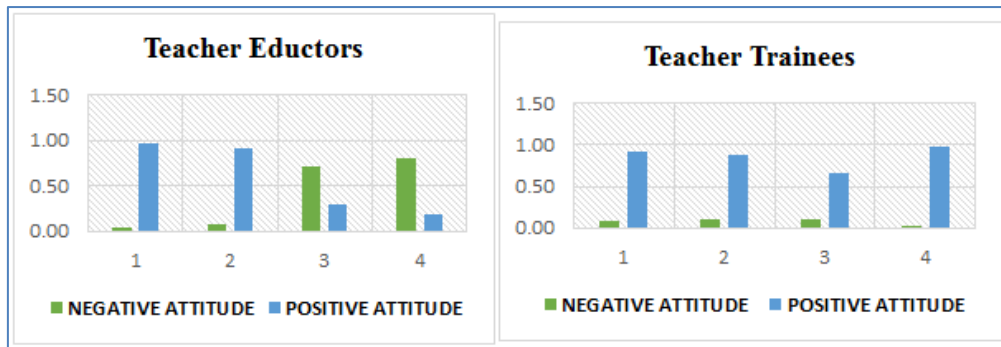
Fig-11: Positive Aspects of online TLP

4.9. Aspects of online mode of teaching you like most

Table-7: Aspects of teaching which you liked most

Responses	Teacher Educator						Teacher Trainee					
	SD	D	U	A	SA	Total	SD	D	U	A	SA	Total
Hassle free and Self-paced Teaching Learning Process	07	10	04	31	09	**61**	06	12	11	26	08	**63**
Interesting and creative	05	12	05	29	10	**61**	04	18	04	25	11	**62**
Effective Time and Resource management	04	11	08	28	10	**61**	05	14	11	19	10	**59**
Home comfort, Not Commuting to workplace.	03	12	10	28	08	**61**	11	17	05	18	15	**66**

The positive aspect of online mode of teaching-learning process is that it is hassle free and self-paced which was accepted by the 66% teacher educators and 54% teacher trainees whereas 28% teacher educators and 29% teacher trainees did not like it. The online mode of teaching-learning process is interesting, and creative is agreed by the 64% teacher educators and 58% teacher trainees at the same time 28% teacher educators and 35% teacher trainees did not feel it interesting and creative. The time and resources are effectively managed in online teaching-learning process and 62% teacher educators, and 49% teacher trainees go with it although 25% teacher educators and 32% teacher trainees were not agreed with this. In online mode of teaching-learning process 59% teacher educators and 50% teacher trainees agreed that it is home comfort and no need to commuting to the workplace, but 25% teacher educators and 42% teacher trainees did not agree with this.
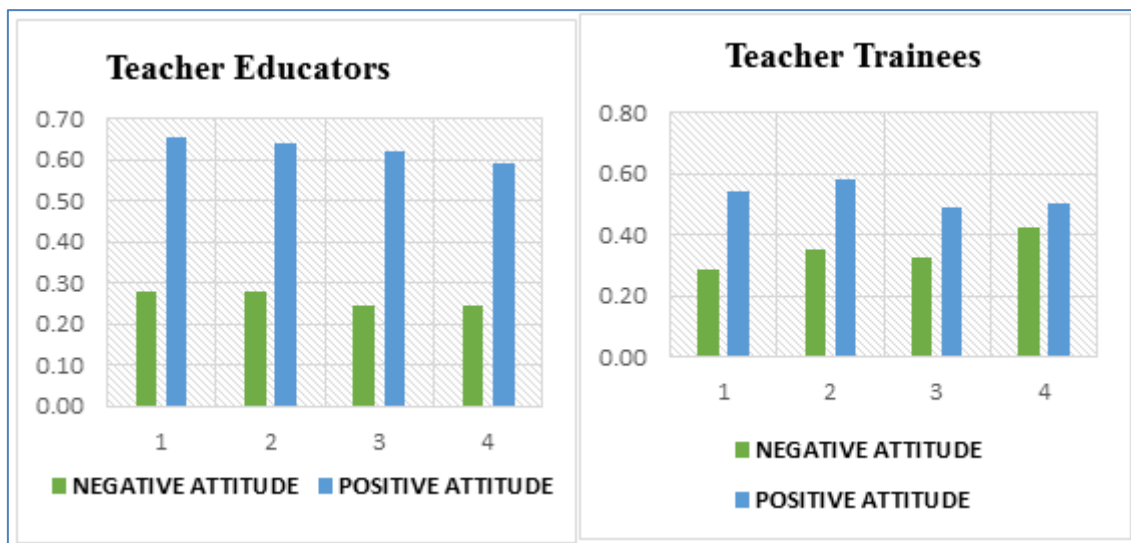

Fig-12: Aspects of teaching which are liked most

5. DISCUSSION

Last section of the survey comprised questions asking the respondents what they liked and appreciated or disliked about online teaching and learning.

According to the calculated data the investigator found that 60% of teacher educators and 72% of teacher trainees believed that college would be closed temporarily and would open after one or two weeks. At the same time 32% of teacher educators and 21% teacher trainees disagree with the statement and believed that it would be for longer time period.

Social interaction is missing in online teaching and this statement was accepted by the 66% teacher educators and 73% teacher trainees whereas 31% of teacher educators and 13% teacher trainees felt that there is no need of social interaction.74% teacher educators and 75% teacher trainees agreed with the sentence that Fellow Teachers and Students are missing in online teaching simultaneously 23% teacher educators and 16% teacher trainees did not have same opinion. There are 74% teacher educators, and 74% teacher trainees were missing the classroom, laboratory, and library concurrently 18% teacher educators and 15% teacher trainees did not bother about all these.

According to one of the student respondents, "Google classroom and WhatsApp recorded lectures were much better. In zoom, there is always network issues, you cannot hear the teacher properly or the teacher cannot hear you. Once the lecture is over, the lecture is gone". Recently, there had an announcement by the HEC regarding better networks and network packages for the students, particularly for those residing in remote areas. The second issue raised by the students was the time management as online learning in their view is taking too much of their time.

Data Packages, Data Exhaustion and Security Aspect of Personal Information, these are also a challenge in online classes. 64% teacher educators and 34% teacher trainees were accepted it, but 31% teacher educators and 35% teacher trainees were not agreed with this statement. 68% of teacher educators and 64% teacher trainees were accepted that there were Network issue/ Log in / Connectivity of App/Power Cuts at the same time 31% teacher educators and 28% teacher trainees did not experienced these issues. Network connectivity was also pointed out as number one issue by majority 64% of the teachers. Keeping students' interest was also another major problem. According to the teachers, they had to adopt active-learning technique to keep students involved in class, a task that was much easier while on campus. Teachers also complained of increment in cheating on examinations/quizzes and assignments. According to them it has become uncomplicated for students to find material online and plagiarizing work. The teachers are finding it more time consuming, burdensome, and

difficult to set up quizzes, exam papers and assignments that are not easy to attempt. A certain percentage though feels like uncontrolled when the students are not visible. But things are improving with each day, and they are learning to manage their time more efficiently and effectively to maintain a work-life balance. They are following strict timetable and informing the students about it. To overcome cheating they are indulging students more into discussions, interactive sessions, and opting for more analytical sort of activities. We are fortunate to have a highly dedicated and committed faculty and a very bright student body.

5.1. Future of Online Classes

Hopefully, COVID-19 will end soon, and things will get back to normal. But, for many, this may have opened more horizons to explore. The teachers who had never thought of getting into E-teaching, and students who had never opted for E-learning might have found it interesting and may be having second thoughts about it. The future as it seems, is going to be quite different and post-COVID education sector will not be the same. The education arena is presumably going to be highly digitized and being equipped with digital skills will be a prerequisite for all. Perhaps, COVID-19 is nature's way of preparing us for the future.

6. CONCLUSION

The analysis indicated that the virtual mode successfully helped all teacher educators and prospective teachers to improve upon and transform online teaching into interactive TLP and expected learning outcome-based teaching through various online platforms during COVID-19 pandemic. How can COVID-19 pandemic help the higher education? Perhaps, it will create a momentum of the "creative destruction" (Schumpeter, 1942). The main contribution of the coronavirus pandemic is that online teaching and digital innovations in higher education that would have normally taken several months or perhaps years to implement due to the bureaucratic paperwork are being introduced in a matter of days or weeks. Once there, this 'digital revolution' in higher education is likely to stay.

This Covid-19 pandemic brings a new evolution in the Indian Education System. Within a span of three-to-four months of lockdown whole education system is ready to shift from classroom teaching to online teaching. This pandemic has given the opportunity to teaching faculty to use information technology in their teaching methodology. While adopting the new methodology of teaching and learning, the teachers must overcome many challenges. For some teachers conducting online classes is itself a great challenge because they are habitual of conducting classroom teaching from many years.

The most important challenge faced by teachers in online teaching is to reach/teach students of remote areas because there is unavailability of strong internet access, no continuous supply of electricity, lack of income source of parents who cannot afford to buy a laptop or android mobile for their children. Teaching numerical subjects like mathematics, cost accounting, financial accounting, etc. or numerical problems are difficult and sometimes tedious in online teaching as compared to classroom teaching. In online teaching methodology it becomes difficult for teachers to motivate learners and they faced the problem of keeping records of students' progress especially in higher education institutions where the number of students is large. To motivate online learners, the learning environment should need to be designed in an attractive way and teacher should focus on critical based learning rather than knowledge based. Even after facing all the challenges in online teaching teachers are motivated to learn the new technology and make the best possible use of all resources for effective teaching. In this time of the Covid-19 pandemic, it is very necessary for both teachers and learners to stay fit, physically healthy and brings positive thought in mind. Management of the educational institution should require providing proper training to teachers about learning software which enables them to teach and guide students effectively and efficiently.

- Funding: "Not applicable."
- Informed Consent Statement: "Written informed consent has been obtained from the participants while collecting data.
- Data Availability Statement: Data is available in Google forms of Researchers g mail account.
- Conflicts of Interest: ` "The authors declare no conflict of interest."

REFERENCES

- Ahmed, A. (2020). Report on online teaching and learning amid covid-19 National College of Business Administration & Economics (NCBA & E), Lahore (Pakistan) SCHOOL OF BUSINESS ADMINISTRATION , NCBA & E, LAHORE Alia Ahmed, Dean School of Business Administration Athar, May. https://doi.org/10.13140/RG.2.2.25997.36320/1
- Archana, S. (2020). Education Sector at crossroads- A Paradigm shift during COVID crisis-: Challenges and Opportunities.
- Arief, Eko, P. A. (2020). EFL Classes Must Go Online! Teaching Activities and Challenges during COVID-19 Pandemic in Indonesia, register journal , 13(1), 49-76
- Atmojo, A. E. P., & Nugroho, A. (2020). EFL Classes Must Go Online! Teaching Activities and Challenges during COVID-19 Pandemic in Indonesia. Register Journal, 13(1), 49–76. https://doi.org/10.18326/rgt.v13i1.49-76.

- Balasopoulou, A., Kokkinos, P., Pagoulatos, D., Plotas, P., Makri, O. E., Georgakopoulos, C. D., Vantarakis, A., Li, Y., Liu, J. J., Qi, P., Rapoport, Y., Wayman, L. L., Chomsky, A. S., Joshi, R. S., Press, D., Rung, L., Ademola-popoola, D., Africa, S., Article, O., … Loukovaara, S. (2017). Symposium Recent advances and challenges in the management of retinoblastoma Globe - saving Treatments. BMC Ophthalmology, 17(1), 1. https://doi.org/10.4103/ijo.IJO.
- Corbera, E., Anguelovski, I., Honey-Rosés, J., & Ruiz-Mallén, I. (2020). Academia in the Time of COVID-19: Towards an Ethics of Care. Planning Theory and Practice, 21(2), 191–199. https://doi.org/10.1080/14649357.2020.175789.
- Esteve Corbera, Isabelle Anguelovski, Jordi Honey-Rosés & Isabel Ruiz-Mallén (2020), Academia in the Time of COVID-19: Towards an Ethics of Care, Planning Theory &Practice, https://doi: 10.1080/14649357.2020.175789.
- Gurung, S. (2021). Challenges Faced by Teachers in Online Teaching during the Pandemic. Journal of Education and Practice, 9(1), 8–18. https://doi.org/10.7176/jep/12-2-06.
- https://emedicine.medscape.com/article/2500114-overview
- https://en.wikipedia.org/wiki/COVID-19_lockdown_in_India
- https://www.researchgate.net/publication/342123463_Impact_of_Pandemic_COVID-19_on_Education_in_India
- Jan, A. (2020). Online Teaching Practices During COVID-19: An Observation Case Study. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3584409.
- Karalis, T., & Raikou, N. (2020). Teaching at the Times of COVID-19: Inferences and Implications for Higher Education Pedagogy. International Journal of Academic Research in Business and Social Sciences, 10(5). https://doi.org/10.6007/ijarbss/v10-i5/7219.
- Kaup, S., Jain, R., Shivalli, S., Pandey, S., & Kaup, S. (2020). Sustaining academics during COVID-19 pandemic: the role of online teaching-learning. Indian Journal of Ophthalmology, 68(6), 1220.
- Murillo de Oliveira Dias. (2020). Will Virtual Replace Classroom Teaching? Lessons from Virtual Classes via Zoom in the Times of COVID-19, Journal of Advances in Education and Philosophy, Scholars Middle East Publishers, Dubai, United Arab Emirates.
- Oliveira Dias, D. M. de, Albergarias Lopes, D. R. de O., & Teles, A. C. (2020). Will Virtual Replace Classroom Teaching? Lessons from Virtual Classes via Zoom in the Times of COVID-19. Journal of Advances in Education and Philosophy, 04(05), 208–213. https://doi.org/10.36348/jaep.2020.v04i05.004.

- Pravat K. J. (2020). Impact of Pandemic COVID-19 on Education in India. International Journal of Current Research, 12(07), 12582-12586
- Radcliffe, D. (2020). Lessons learned: 9 takeaways from teaching online during COVID-19 Lessons learned: 9 takeaways from teaching online during COVID-19 Tips for remote instruction developed in the past 10 weeks. May, 0–10.
- Sarang, S. Bhola. (2020). Electronic Learning – Voyage of Educational Transformation.
- Sharma, V. C. (2020). Effective Online Teaching in Higher Educational Institutions: a. May.
- https://www.researchgate.net/publication/34137022.
- Strielkowski, W. (2020). How can the COVID-19 pandemic help higher education? April. https://doi.org/10.13140/RG.2.2.11331.96804.
- Su, F. (2020). 'Blended Learning Pedagogy in Higher Education'. In: Peters M., Heraud R. (eds) Encyclopedia of Educational Innovation. Springer, Singapore. DOI: 10.1007/978-981-13-2262-4_19-2
- Wadim, S. (2020). How can the COVID-19 pandemic help higher education? Prague Business School, Werichova 29, 15200 Prague, Czech Republic