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FEASIBILITY OF ADOPTION AND OVERVIEW OF ONLINE LEARNING IN INSTITUTES OF PAKISTAN AFTER COVID-19: AN INSTRUCTORS AND LEARNERS PERSPECTIVE

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Abstract

The educational process grows intellectual and critical thinking which helps a person to make correct or optimal decisions by using logic, calculations, and experiments. This factor helps a person to use available resources in an optimal way to maximize the outcome. Unfortunately, along with all other areas, the educational process was seized initially during COVID-19 as well. To continue the education process in lockdowns, academia has shifted from traditional learning (TL) towards the online learning (OL) process. Instructors and learners of different academies belong to different fields and backgrounds. Thus, it is not easy to smoothly adopt OL for all of them. Therefore, this study is aimed to conduct a survey to check the feasibility of the adoption of OL for both types of audiences i.e. instructors and learners. The purpose is to compare the thoughts of both audiences and find the difference between them by using different descriptive and inferential statistical techniques and to have a brief overview of OL and TL in the academies of Pakistan. This study will help academies to understand the flaws, gaps, and limitations of OL from instructors' and learners' perspectives as the gaps can be filled by improving existing approaches to make the OL system smoothly adoptable by everyone in Pakistan in the future.

Keywords : Online Learning, Traditional Learning, COVID-19, Instructor, Learners

I. Introduction

Traditional learning (TL) is a process which is usually followed globally from lower to higher educational institutes. The student is admitted to a specific field and class. Which provides physical classes, experimental laboratories, computer labs,

libraries, and playing grounds along with many other facilities to make learning environment effective and interesting. Whereas, the online learning (OL) process is carried out by using different software (SW) tools. There are no physical interactions or face-to-face classes/sessions with instructors and friends. As instructors and learners are not bound to be at the same physical location to deliver/attend the lectures, that is the reason that OL is also referred to as Distance Learning (DL). OL is more restricted globally in lockdowns during COVID-19 [VII]. Because even after online classes, instructors and learners cannot go out shopping and visit their favorite places. Which makes OL uninteresting, unexciting, and boring. OL is adopted globally due to lockdowns during COVID-19. Several countries failed to adopt and efficiently continue OL while some developed countries have identified and overcome problems faced by instructors and learners while using online tools and continued to carry education process. OL is very common terminology and is usually feasible for individuals who want to continue their studies, have proper resources to attend online classes, and cannot attend physical classes due to their jobs or other duties.

Due to COVID-19, OL became a necessity [V, IX] to be adopted by all types of academic members. It was a big challenge for academies to run the OL process smoothly, for instructors to maintain the decorum of classes, and also for learners to concentrate on online sessions to understand new concepts. During this period, instructors and learners belong to a variety of fields, backgrounds, and computer skills. Which actually matters when it comes to the smooth adoption of OL. By taking into the eye the differences between instructors and learners, this study is carried out by authors. This qualitative research contains a brief and general overview of OL and it is intended to collect the views of instructors and learners regarding OL. As the feasibility of the adoption of OL in Pakistan can be seen from collected responses by using best-fitted statistical techniques.

As the educational area is badly affected by the COVID-19 crisis. Therefore, numerous research studies have been published so far to improve the OL process. Related studies are discussed below. In 2006, a survey-based study was carried out in the USA by taking 217 participants in a single course. The findings of the study show that DL is feasible for older students who are doing masters, M.Phil. Ph.D., or post-doctorate. It helps them to manage their side works or jobs along with education. Further results show that DL is not feasible for students of undergraduate age from 18 to 21 [XII].

Another study was conducted in Saudi Arabia to see the impact of OL and TL on the performance of learners in 2019 [XVI]. The data was collected from 80 nursing students in an undergraduate program. The findings of the research were similar to the findings of [II-IV, XIII, XVII] studies, which indicate OL is having a positive impact on the performance and attitude of students. Learners are achieving higher grades in OL as compared to TL observed by the authors.

By surveying existing studies, it is observed that OL is most effective and has a positive impact on the performance of learners who want to continue studying along with part-time jobs before COVID-19. But OL generates problems when it has become necessity for undergraduate students as well globally.

The paper is organized in following manner. Section 2 contains existing studies from the literature. Section 3 covers the methodology which is followed to have results and outcomes for this research. The dataset, survey questions, and framework of data analysis are briefly discussed there. Whereas all the results, graphs, and charts are discussed in terms of percentage variations, multiple bar charts, comparison of medians, and inferential statistical technique in section 4. Finally, section 5 concludes the paper.

II. Materials and Methods

Data Collection

To collect views from academic members regarding OL and TL, a detailed qualitative survey is designed. The survey contains 16 different survey questions. According to the nature and suitability of each question, the 2-option, 4-option, or 5-option Likert scale is used to collect responses. The options for Likert scales are either taken default (D) or customized (C) according to the suitability of the question. Figure 1 shows five different scales along with their options and scaling/coding numbers which are used further to collect responses. Scaling is also done from 1 to 2, 1 to 4 and from 1 to 5 for 2-option, 4-option, and 5-option Likert scale respectively. This helps authors to import datasets in the IBM SPSS software tool to further analyze the data by using different statistical techniques. The survey is distributed to 14 different institutes in Pakistan. In total 775 responses were collected from the random audience, which involves 122 from instructors and 653 from learners.

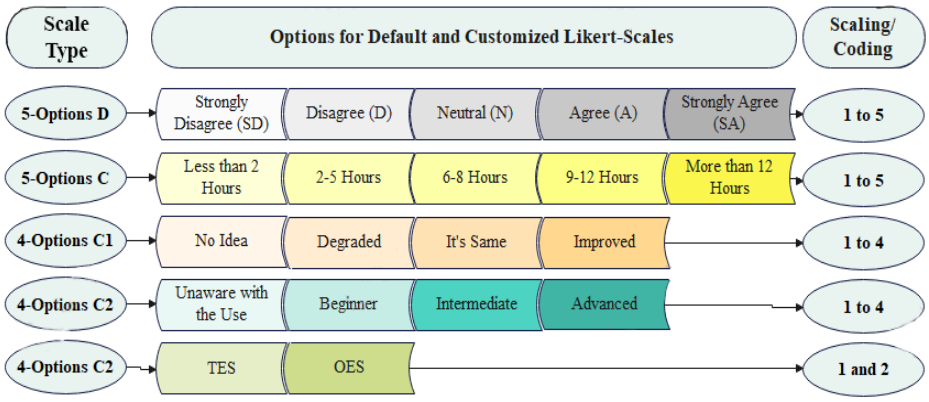

Fig. 1. Likert scales used for this research

Table 1 contains 16 statements of all survey questions along with their variable names and the type of Likert scale used. Variable names are set according to the type of Likert scale. For example, the survey questions using the 5-options default Likert scale are having different variable names in series. Similarly, based on the type of scale, variable names are specified in series. As analysis can be done easily. All variables are qualitative in nature.

Table 1: Survey questions along with their options and nature

Sr. No	Variable	Statements of Survey Questions	Options
01	Vr_N1	Does OL improve teaching style (I) / learning curve (L)?	5-options D
02	Vr_P1	Rate your own performance.	4-options C1
03	Vr_N2	Is it easy to conduct classes from home?	5-options D
04	Vr_N3	Does OL effects your daily responsibilities?	5-options D
05	Vr_P2	Rate opposite audience performance.	4-options C1
06	Vr_N4	Does the load increase? Attendance (I) or assignments (L)	5-options D
07	Vr_N5	Do you face internet connection interruptions?	5-options D
08	Vr_N6	Does your voice/snaps were misused unprofessionally?	5-options D
09	Vr_C1	Which is the better way of education in your opinion?	2-options C
10	Vr_N7	Does online classes were interactive as traditional?	5-options D
11	Vr_N8	Is it feasible to adopt OL in all institutes in Pakistan?	5-options D
12	Vr_N9	Does OL save time as compared to TE?	5-options D
13	Vr_N10	Does OL save the resources of institutes?	5-options D
14	Vr_T1	How many hours did you use digital screens during OL?	5-options C
15	Vr_T2	How many hours did you use digital screens before OL?	5-options C
16	Vr_S1	Rate your computer skills.	4-option C2

Data Analysis Framework

The data analysis framework for this research includes three phases. Preprocessing of data, descriptive and inferential statistical techniques. After data collection, the dataset is pre-processed in the first phase. Where conversion of data types of all the available options is done from string to integers with the help of the scaling method. As IBM SPSS software tool is dealing with numbers to make calculations and apply statistical techniques. In the second phase, data is analyzed by using frequency multiple bar charts, percentage variations, and a comparison of medians. Whereas in the third phase, to select and apply the best-fitted inferential statistical test, data screening is followed to check the randomness and normality of data. And based on those results the Mann-Whitney U-test (MWU) is applied to generalize the results for the population based on the collected sample size i.e. 775 responses.

III. Results and Discussions

The results of this qualitative research are found by using different techniques to understand the perspectives of instructors and learners in a better way. To illustrate various results for this research, the authors have used different pie charts, tables, and multiple bar charts. Based on those results, a comparison table is created to show the unsettled gaps and differences between OL and TL approaches.

Percentage Variations and Multiple-Bar Charts

As the data is collected by using 5 different Likert scales shown in figure 1. So, figure 2 illustrates the shared percentage of respondents of variables using the 5-option D Likert scale only.

In figure 2 results for Vr_N1 indicate that around 44% of the sample size does not observe any improvement in teaching style (instructors) or learning curve (learners) during OL duration. Whereas other 56% of the participants, 16% were neutral. Around more than 46% of the respondents reported that online classes are easily conducted from the home in the results of Vr_N2. But 43% of the sample size have faced difficulties to attend online classes from home. It can be seen for Vr_N3 that more than 60% of the respondents reported that the adoption of OL has affected their daily routine tasks or responsibilities. Whereas only 20% of respondents disagreed. Results for Vr_N4 show that due to online learning, a load of responsibilities on instructors is increased. Also, learners have faced a heavy load of assignments in online sessions. As more than 60% of the total respondents agreed whereas just less than 20% disagreed with this statement. For Vr_N5, it can be seen that just less than 3% of the respondents disagreed with internet connection interruptions. Whereas more than 70% have faced internet problems like slow browsing, frequent disconnections, and modem or device issues during their online sessions. For instructors, it breaks the flow of delivering lectures and distracts the concentration of learners from online classes. For Vr_N6 more than 50% of the participants disagreed with the misuse of their snaps or clips (taken from online lectures by others students) in an unprofessional way. But still, around 30% of the participants have reported that their funny clips or voice are unprofessionally used by other students. Around 30% of the participants agreed on that. Further figure 2 depicts that around 40% of participants have found that online lectures are equally interesting and interactive as traditional ones. And around 45% of the audience disagreed with Vr_N7. Whereas OL is not a feasible option to be adopted in other universities of Pakistan at this stage suggested by more than 50% of the audience in the results of Vr_N8. More than 55% of the participants have said that OL is time efficient as compared to TL in Vr_N9. Results of Vr_N10 show more than 68% of respondents think that OL is saving resources of campuses in Pakistan. As the university points out, shuttles or buses are not traveling due to lockdowns and physical classes are not conducted which saves the cost of fuel, electricity, inks, markers, and some other paperwork.

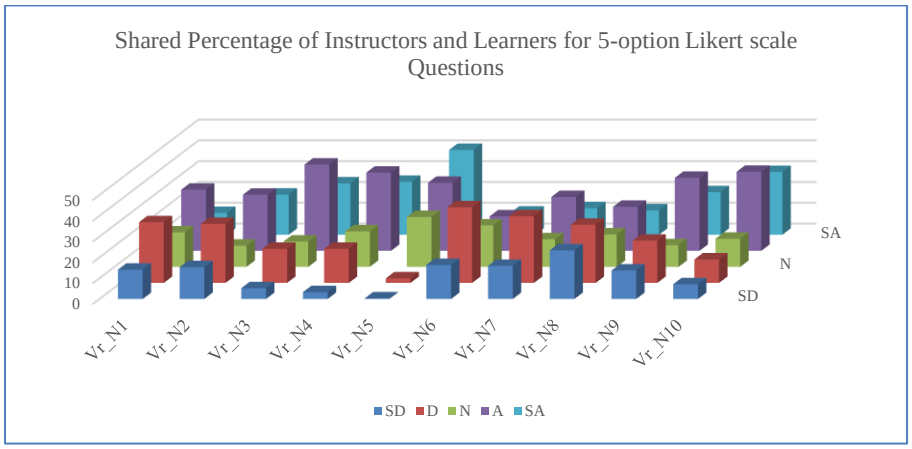

Fig. 2. Shared percentage of variables using 5-option default Likert scale

When instructors and learners are asked to rate their performance during the duration of OL then surprising results were found. It can be observed from figure 3(a) that majority of instructors feel that their performance is improved as compared to TL whereas in figure 3(b) learners feel that their performance is degraded during the OL period. Around one-fourth sample size of instructors and learners said that there is no change in their performance. Furthermore, around 65% of instructors reported that during OL learners' performance is degraded. The performance of learners is evaluated by assigning different tasks, and assignments and taking online exams. Only 16% of instructors believed that learner's performance is improved shown in figure 3(c). The same question was asked by learners for rating the performance of instructors. Results are shown in figure 3(d). More than one-third of respondents stated that the performance of instructors is degraded whereas around 29% said it is the same and 23% reported that it is improved.

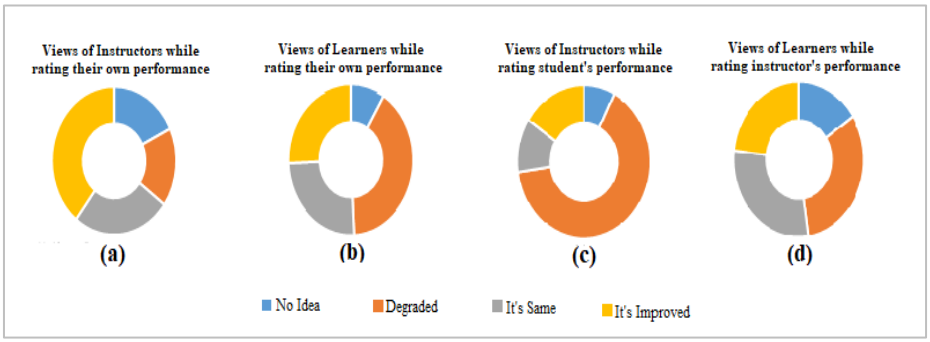

Fig. 3. Results of rating performance during OL by instructors and learners

When the results of figure 3 are generalized and associated with each other then it is observed that according to both types of audiences, the performance of the majority of learners is degraded. Whereas the performance of around one-third of instructors is improved during OL.

Figure 4 contains an illustration of the shared percentage for both audiences (instructors and learners) for using digital screens during and before OL. As can be observed from the given graph that during the period of OL respondents are facing digital screens for a very long duration i.e. more than 8 hours daily. During the period of OL, the ratio of participants 3 times and 4 times increased for more than 12 hours and 9-12 hours respectively for using digital screens as compared to the TL approach. Which is dangerous for human health. Several research studies have been carried out to highlight the increased rate of health issues due to the excessive use of digital screens. Computer vision syndrome, spine issues, obesity concerns, and posture complications originated. Which are further leading human health to worst and other serious problems [I, VI, XIV]. Additionally, the ratio of participants who are facing digital screens for less than 2 hours in the TL period decreased up to 4 times during the period of OL.

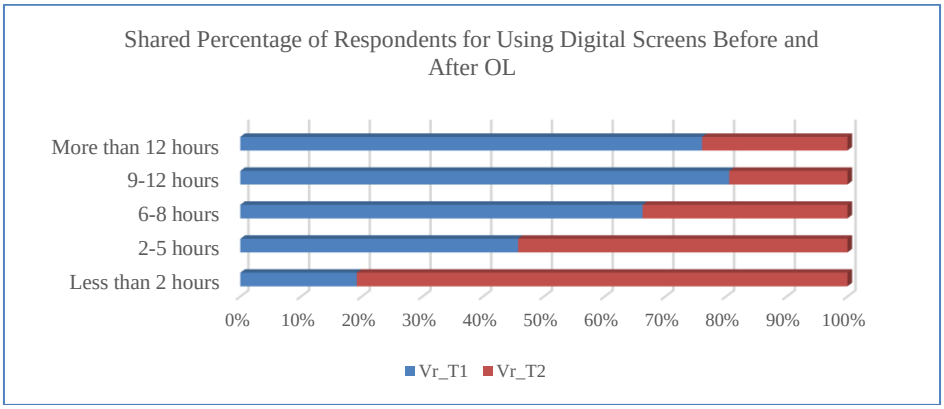

Fig. 4. Respondents' views regarding the use of digital screens before and during OL

The clear views of respondents can be seen in figure 5 for feasible learning ways of education in the eye of instructors and learners in Pakistan. Only 19% of the responses are in favor of OL whereas more than 80% of the sample size prefer TL to carry the education process in Pakistan.

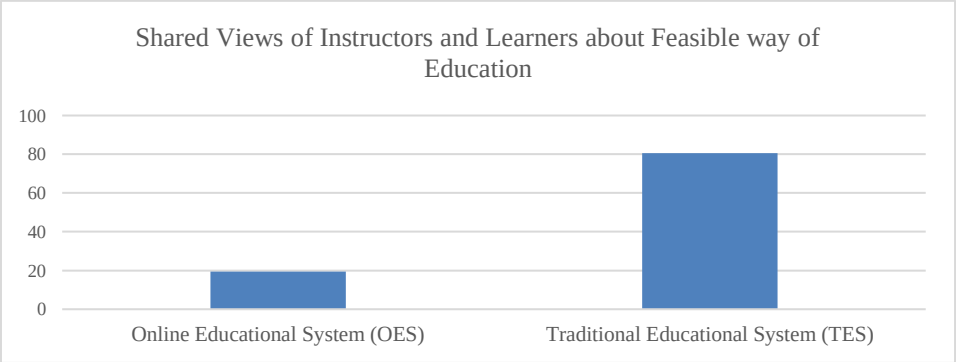

Fig. 5. A shared view of respondents regarding the feasible way of education

Comparison of Medians

Figure 6 shows the difference between the medians of both audiences. As all survey questions are qualitative therefore medians are compared to understand them in a better way. As mean values help to understand the behavior of quantitative data. It can be seen that the medians for variables Vr_N1, Vr_N2, Vr_P2, Vr_N6, and Vr_T1 are not the same. Views of instructors and learners are different for these variables. Otherwise, it is the same for other survey questions. Till now, the difference between the perceptions of participants has been observed. But in the inferential statistical part, the results will be generalized for the whole population based on the sample size i.e. 775 participants.

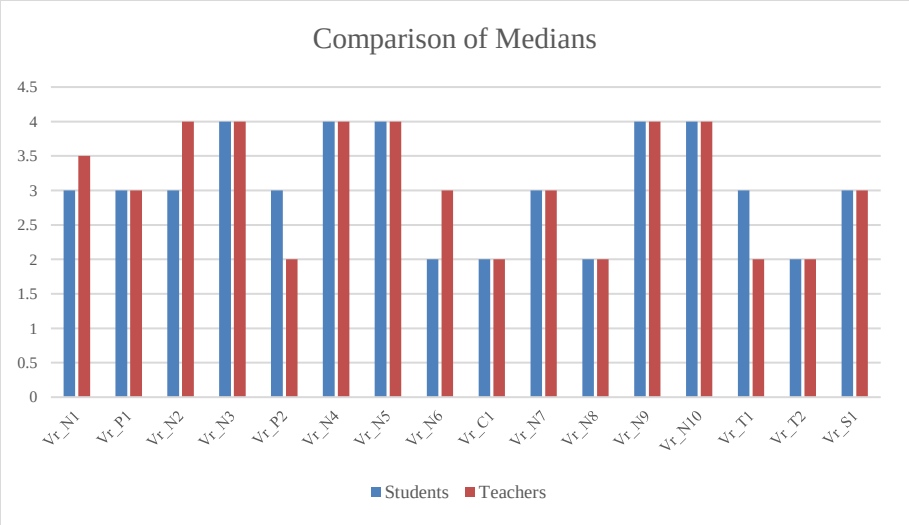

Fig. 6. Comparison of Medians

Randomness and Normality

After observing data in terms of percentage variation and multiple bar charts. RUNs and 1 Sample K-S were applied by using IBM SPSS to check randomness and normality respectively at a level of significance (α) 0.05. It can be seen in table 2 that except for Vr_N1, Vr_C1, Vr_N8, Vr_N10, Vr_T1, and Vr_S1 all other variables are random. Whereas no variable is found normally distributed towards its mean. This shows the suitable type of test for this data is non-parametric.

Table 2: Results of Data Screening

Variables	Randomness (α=0.05)	Normality (α=0.05)	Test Type
Vr_N1	No	No	Non-parametric
Vr_P1	Yes	No	Non-parametric
Vr_N2	Yes	No	Non-parametric
Vr_N3	Yes	No	Non-parametric
Vr_P2	Yes	No	Non-parametric
Vr_N4	Yes	No	Non-parametric
Vr_N5	Yes	No	Non-parametric
Vr_N6	Yes	No	Non-parametric
Vr_C1	No	No	Non-parametric
Vr_N7	Yes	No	Non-parametric
Vr_N8	No	No	Non-parametric
Vr_N9	Yes	No	Non-parametric
Vr_N10	No	No	Non-parametric
Vr_T1	No	No	Non-parametric
Vr_T2	Yes	No	Non-parametric
Vr_S1	No	No	Non-parametric

Mann Whitney U-test

The dataset contains 2 types of audiences and at this stage, results are generalized for the whole population so the MWU test is found best the fitted test in this case. The results are represented in figure 7 which shows at the level of significance (α) 0.05 and 0.1, Vr_C1, Vr_N7, Vr_N8, Vr_N9, Vr_N10, and Vr_T2 satisfy null hypothesis. This means there is no difference in the views of instructors and learners for the six above-mentioned variables. Whereas for the remaining 10 variables, instructors and learners are thinking the same.

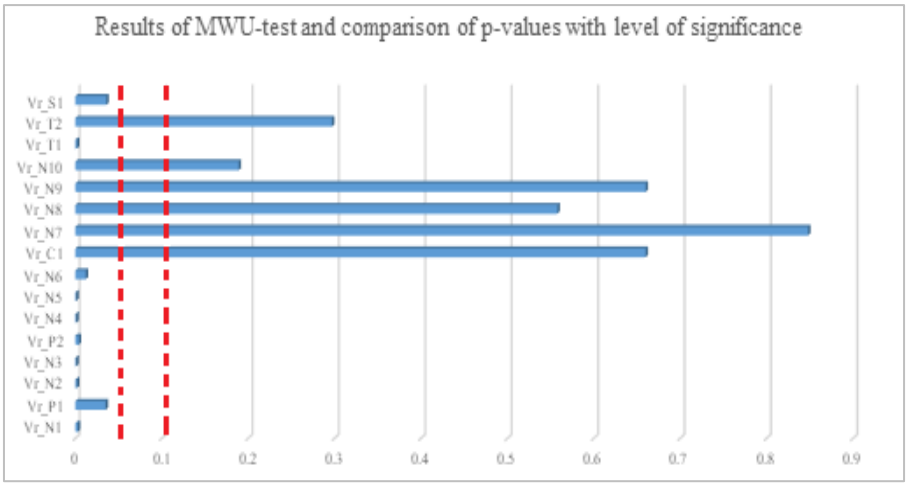

Fig. 7. Results of the MWU test

It can be seen that, while the comparison of medians, views of instructors and learners for 5 variables (Vr_N1, Vr_N2, Vr_P2, Vr_N6 and Vr_T1) were different.

Rest of them were having same views. Whereas after getting results of MWU-test, views for 10 variables (Vr_N1, Vr_P1, Vr_N2, Vr_N3, Vr_P2, Vr_N4, Vr_N5, Vr_N6, Vr_T1, and Vr_S1) are found different in both audiences. This indicates results may vary after generalizing the collected results for the whole population.

IV. Comparative Analysis

After conducting a survey and analyzing all results, a brief comparative analysis has been done by authors based on 6 different parameters. This helps to identify the unsettled issues in OL and indicates which way of education is better based on specific parameters.

Performance

By having an eye on the performance of instructors and learners during OL. It is observed from the survey results that the performance of most of the learners is degraded. Whereas, there is not enough evidence to conclude the performance rate for instructors. As conflicting results have been collected.

Time Effective

It can be observed that TL requires some extra physical activities to meet the academic requirements and to attend physical classes. Like, as being ready and dresses-up, going to their campuses, going to labs to attend practical sessions, etc. So, in this way, OL saves time. Because it requires no extra effort to attend online classes except a few resources like a fine internet connection, a machine (PC or laptop), and a proper place.

Cost Efficient

Based on cost parameters, the perspective varies for attendants (instructors and learners) and providers (academies, campuses, or universities). It was observed during the COVID duration that resources of institutes were saved during OL as compared to TL. As institutes do not require to manage, provide and supply the buses, diesel, and electricity respectively. Paperwork is inks, markers, and management costs of campuses are reduced as well due to online activities. But on the other side, attendants are bound to arrange machines to attend classes, internet connections, electricity alternatives to avoid electricity failures (load-shedding problems in Pakistan), etc. Therefore, OL was cost-efficient for campuses but not for the audience.

Interactive Sessions

In physical classes, instructors are having an eye on all learners while delivering the lectures, unlike in online sessions. Different open discussions and question-answer sessions and group quizzes are successfully conducted there. Whereas, in online classes, most of the learners do not join the classes through their webcams due to limited resources. Like the poor speed of the internet, bad background views, not having private space, frequent disconnections, etc. These reasons make learners unavailable to participate in class activities such as physical classes.

Availability of Internet

Availability of the internet is the main limitation of OL. Many instructors and learners are belonging from rural areas of Pakistan, and are living in Hostels during physical classes. They are not having enough resources to attend internet connections. This problem is not just limited to rural areas only. But in Urban areas, due to frequent electricity failures (load-shedding hours), interruptions are faced during online sessions.

Health Problems

OL has been found very dangerous for health when it comes to the undergraduate level. As physical activities are reduced in online sessions, screen time is riskily increased for the eyes, and continuous sitting in front of computer screens affects body posture and spine very badly [XI]. It is not possible to carry online education by facing computer screens for 6-7 daily and prevent health issues. Strict precautions would be imposed to be followed by individuals for managing screen brightness, protection glasses for eyes, best sitting postures, ideal distance from the screen, the optimal level of monitors to avoid neck and shoulders pain [XI], etc. Whereas TL requires more effort on some grounds but it is physically healthy. As face-to-face meet-ups with friends and changing place is mentally healthy.

V. Conclusion

After conducting this qualitative research in the institutes of Pakistan, it is observed that OL is still a challenge and not smoothly adaptable in institutes/universities of Pakistan. Most instructors and learners are facing problems to make online classes as interactive as traditional ones. But due to lockdowns, physical interactions were seized and the use of digital screens is immensely increased. Which results in physical inactivity and further health problems [VIII, X, XV]. The performance of learners is degraded during OL. The majority of participants have said OL is not feasible. It is observed from this research that respondents were not ready to adopt the OL process. It is still a challenge for undergraduate students to adopt OL for regular studies.

Conflicts of Interest:

There is no conflict of interest regarding the paper.

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