

Higher Education During the Pandemic Period - A Study on Digital Initiatives and Online Classes in the Arts & Science Colleges in Kerala

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Abstract

COVID-19 was reported for the first time in Wuhan, which made a downward spiral in the world economy. It had a devastating effect on every sector of the economy including the education sector. Schools and colleges were forced to remain closed as part of social distancing measures adopted during the period. Several digital initiatives of various Government agencies gained wide acceptance during the period. Digital initiatives like e-GyanKosh, Swayam, VIDWAN, FOSSEE etc. are gaining popularity during the pandemic period and all of which facilitated the smooth functioning of academic activities in the crisis period. The potential of online classes are also utilized to ensure uninterrupted flow of teaching-learning process in the pandemic period. Even though, online classes have the advantage of the comfort of being at home, flexible hours of handling classes etc. it has its own drawbacks like difficulties in assessing students, lack of effectiveness, internet connectivity issues, lack of personal device for attending the online classes, anxieties, health issues both physical and psychological etc. The study is an attempt to list out such digital initiatives and also an assessment of online classes during the pandemic period. The study result highlight that comfort of being at home is the best part of online classes to teachers and students. Lack of effectiveness is the most important disadvantage of online classes. The constant use of mobiles, computers and laptops for a long time creates various types of health issues, both physical and psychological, to the respondents. Back pain, neck pain, eye problems, and headache are common issues for both teachers and students.

Keywords: Education, Digital initiatives, Online classes, Health issues.

Introduction

The outbreak of coronavirus disease 2019 (COVID-19), is a catastrophic calamity that has affected the entire world at the speed of light (Sundarasan et al,2020). The impact of which can be felt in every fields. No doubt the education sector is also affected, which made all its process in a standstill. (Thomas et al, 2020). Nearly 1.6 billion learners in more than 190 countries and all continents were affected by COVID-19 (UN,2020).

In India, Educational institutes/universities have remained closed since the mid of March-2020 because of the fast spread of COVID-19 (Naik, et al., 2021). About 32 crore learners stopped to move to schools/colleges and all educational activities were brought to an end (Jena,2020). All the stakeholders of the education system were forced to explore ways to overcome the barrier to compensate for the academic losses of learners. Teachers are forced to start using technology for distance and remote teaching. Online

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teaching tools like Youtube live, Google Classes, Zoom, WebEx, Skype, Moodle etc., have been used by teachers all around the world (Verma & Priyamvada, 2020). Online learning is inevitable in a pandemic situation as it provides the opportunity for carrying out teaching-learning process (Shaid, 2021). Since the beginning of the COVID-19 pandemic, Universities around the world have been taking rapid actions to ensure students learning continuity and secure the well-being of their students.

Statement of the Problem

Educational institutions all around the globe were forced to close their doors in response to the growing coronavirus outbreak. Seeking the help of digitalization was the only measure at the time to overcome the crisis. The pandemic has been steering the education sector forward with technological innovation and advancements. The contribution of digital initiatives of UGC, MHRD etc. and online classes cannot be ignored even in the post-pandemic period. The paper tries to list out some of the major digital initiatives in higher education. The advantages and disadvantages of online classes and the impact of online classes on physical and psychological health of teachers and students were also investigated through the study.

Objectives of the Study

1. To list out the digital initiatives in the higher education system which are gaining wide acceptance during COVID19.
2. To identify the best and worst parts of online classes from the point of view of teachers and students.
3. To analyze physical and psychological health issues of teachers and students due to online classes.

Research Methodology

The present study is descriptive and analytical in nature.

Digital initiatives of various Government agencies and online classes are the two pillars

that hold up the higher education sector to continue its functioning. Digital initiatives are widely used to facilitate the smooth functioning of academic activities during the crisis period. For ensuring the uninterrupted flow of teaching-learning process, online classes are inevitable during the pandemic situation. For easy understanding, the present study is presented into two parts - digital initiatives in higher education and online classes. The first objective is related to digital initiatives; the second and third objectives are related to online classes. The first objective is concerned with mere listing out of various digital initiatives of Government agencies in the higher education system, its purpose and also beneficiaries.

Data Sources

Both primary and secondary data were used for the present study. Primary data were collected from students and teachers to identify the best and worst parts of online classes and also for analyzing the physical and psychological health issues of the respondents using a questionnaire through online survey. Secondary data were used for listing out the digital initiative in higher education. For this, official reports of various Government and other agencies, research articles and websites were reviewed.

Population

Higher education system in the State of Kerala consists of arts and science colleges, engineering colleges, medical colleges, law colleges, B.Ed colleges, Arabic colleges, music colleges, physical education colleges and special education colleges. Since arts and science colleges constitute large in number, the study is limited to arts and science colleges. Hence the population for the present study is the students and teachers of arts and science colleges functioning in the State of Kerala.

Sampling

Multi-stage sampling was used for the purpose of selection of samples. The first stage is concerned with the selection of universities. From among the four universities which are general in nature i.e. Kerala, MG, Calicut and

Kannur one was selected at random ie. MG university. The next stage is concerned with the selection of colleges. Among the fifty seven aided and government colleges under Mg university ten were selected at random. Next stage is concerned with selection of respondents. Purposive sampling was used for selection of sample respondents. From among 579 teachers working in the selected colleges fifty teachers were purposively chosen. Teachers handling at least three hours of online classes per day and had previous experience in handling offline classes only were selected as samples. Third year degree students only were considered for the study as they are having offline class experience and online class experience in the same institution. Those teachers and students satisfying the criteria set only were included in the sample frame. Five teachers and five students from the selected

colleges satisfying the criteria were selected as samples for the study. Accordingly, hundred respondents were selected. A sample size of thirty are even acceptable for a comprehensive assessment (Shetty, (n.d.)) hence, the sample size is justifiable.

Tools Used

Data collection tool for the study is questionnaire which was distributed using Google Forms online application. Ranking questions and scaling questions were included in the questionnaire. Collected data were analysed with the help of IBM-SPSS and MS Office Excel. Simple percentage and Mann Whitney U test were used for analyzing the collected data. As the sample size is small non-parametric test is suitable for the study, hence Mann Whitney U-test is used. Excel functions like COUNIF, SUMPRODUCT were also used for the study.

Table1
Variables Selected for the Study

Objectives		Variables
Best and worst part of online classes	Best part	Flexibility, Comfort, Convenience, Ease of conduct, Advantages of integrating technology in teaching learning environment
	Worst part	Lack of effectiveness, Less face to face interaction, Difficulty in proper assessment and feedback, Technical problems, Difficulty with practical sessions
Physical and psychological health issues	Physical	Back pain, Neck pain, Eye problems, Head ache
	Psychological	Symptoms of depression, Sleeplessness, Anxiety

Analysis and Discussion

Objective 1 - Digital initiatives in higher education

Inorder to list out various digital initiatives getting popularity during the pandemic period official reports of various Government and other agencies, research articles and websites were reviewed. On the basis of the data got from the literature, the following initiatives were listed out which can be used by teachers and students during the pandemic period and even in the post-pandemic period.

The MHRD and University Grants Commission (UGC) have made several arrangements by launching many virtual platforms with online depositories, e-books and other online teaching/learning materials, to students to continue their learning. Some of the digital initiatives of UGC & MHRD for higher education gaining popularity during COVID-19 are:

1. eGyanKoshis a National Digital Repository of digital learning resources of open and distance learning institutions in the country. It stores, index, preserve,

- distribute and share the resources with all its rights reserved by IGNOU, unless otherwise stated(Gupta& Gupta,2017)
2. Gyandarshan was launched in the year 2000, which offers 24-hour educational channels. It is one of the joint ventures which is started by the Ministry of Information & Broadcasting (I & B Ministry), Ministry of Human Resource Development (MHRD), These learning programs include lessons for primary, pre-school, higher and secondary students, college students, young people looking out for career opportunities, and various working professionals. (Gupta& Gupta,2017).
 3. NEAT (National Education Alliance for Technology) a Public-Private Partnership model between the Government and the Education Technology companies of India. It aims to bring the best technological solutions in education pedagogy on a single platform for the convenience of learners (Jena,2020).
 4. Gyandhara IGNOU's internet audio counselling service is known as Gyandhara, which facilitates live discussions by the teachers and experts on the topic of the –Adhyayan, which can be listened by students(Gupta & Gupta,2017)
 5. Shodhgangais a digital repository of theses and dissertations submitted to Indian universities. It is maintained by INFLIBNET Centre , which ensures easy access and archiving of theses(Gupta & Gupta,2017).
 6. e-PG Pathshala is a gateway for e-books upto PG which provides High quality, curriculum based, and interactive content in different subjects across all disciplines(Gupta& Gupta,2017).
 7. VIDWANA premier subject expert's database and national research network in India that contains information about expert's background, contact address, skills and accomplishments of the individuals. The database provides support to researchers, scientists, respective organisations and Government agencies for finding similar experts in same subject areas (Panda&Kannan,2016).
 8. E Adhyayan project is initiated by UGC and Ministry of Human Resource development. It is a repository of e-books for undergraduate and post graduate courses. The e-books are derived from e text of e-PG pathshala(Gupta& Gupta,2017)
 9. NDLI (National Digital Library of India) (<https://ndl.iitkgp.ac.in/>) is a repository of e-content on multiple disciplines for all kinds of users like students (of all levels), teachers, researchers, librarians, library users, professionals, differently-abled users and all other lifelong learners. It is being developed at the Indian Institute of Technology Kharagpur (Gupta & Gupta,2017)
 10. SAKSHAT A One Stop Education Portal launched on October 30, 2006 to facilitate lifelong learning for students, teachers and those in employment or in pursuit of knowledge free of cost to them. The content for the respective subject, was prepared by representatives from educational institutions like IGNOU, Delhi University, Kendriya Vidyalaya Sangthan, Navodyaya Vidyalaya Sangthan, National Institute of Open Schooling and National Council for Educational Research and Training etc. (Mahat & Nalawad,2013).
 11. FOSSEE (Free/Libre and Open Source Software for Education) is part of the National Mission on Education through Information and Communication Technology (ICT), Ministry of Education (MoE), Government of India. It promotes the use of FLOSS tools to improve the quality of education in our country. It promotes open source software for education as well as professional use(Gupta & Gupta,2017).
 12. National Academic Depository of India: The National Academic Depository of India is an initiative Ministry of Human

Resources Development, Govt. of India towards maintaining a database to hold the academic awards issued by Educational Institutions in an electronic and digital form (Gupta & Gupta,2017)

13. SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) is a mobile and web-based interactive open education interface where courses are found from high school to university level which is designed to achieve access, equity and quality of education. (Majumder, 2019). The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. The SWAYAM is four quadrant approach e-Tutorial, e-Content, Web Resources, Self-Assessment (Hiremath, 2017).

Discussions

The covid19 pandemic necessitates relying on various online platforms to continue academic activities all around the globe. Digital initiatives like e-GyanKosh, SWAYAM, VIDWAN, FOSSEE etc. are gaining popularity during the pandemic period and all of which facilitated the smooth functioning of academic activities in the crisis period.

Objective 2 -Best and Worst part of Online Classes

Review of Literature

Different stakeholders have their own experiences and are facing various problems with online learning mode. Review of literature reveals that unrestricted access to information, knowledge and learning can be considered as the foremost advantage of online classes to learners. The use of e-tools largely contributes to enhancing student’s digital intelligence and IT competencies in general (Zounek & Sudický, 2013).Time-saving and flexible class timing can be considered as the

important advantage of online classes(Dangal & Maharajan,2021). The main benefit of online education to both faculty and students is that it allows time and place for independent access (Jingyu,2014).

Less interaction seems one of the important cons of the online classes for teachers and students. Lack of effectiveness is the worst part of online classes as far as teachers and students considered(Dangal&Maharajan,2021).Lack of material equipment, internet connectivity and also,lack of sufficient knowledge and skillstouse these technologies are the main disadvantages of online classes. Technology-enhanced learning may also cause negative resentments with students who lack sufficient motivation and the ability to organize workload and learn independently(Zounek&Sudický,2013).

Result of Survey Data

Through the literature review most important advantages and disadvantages of online classes were identified and were used in the questionnaire. The respondents were asked to rank the advantages and the disadvantages of online classes. First rank will be given to most important one and last to the least important one. The collected data were analysed using excel functions like COUNTIF, SUMPRODUCT etc. to rank the statements asper the order of importance. The statement having least SUMPRODUCT value will be the most important one and vice versa. Excel formulas applied for ranking are:

COUNTIF: For counting the number of respondents gave same rank for the statements.

(=COUNTIF(range,criteria)

SUMPRODUCT: To find out weighted rank score for each statements.

(=SUMPRODUCT (array1, [array2], array3],....))

Table 2
SUMPRODUCT Score of Advantages of Online Classes

Advantages	1	2	3	4	5	Score
	(=COUNTIF(range,criteria))					(=SUMPRODUCT(array1,[array2],array3),....))
Flexible hours of online classes	14	49	16	17	4	248
Comfort of being at home	54	18	24	4	0	178
Convenience of online classes with limited resources	16	17	52	11	4	270
Ease of conduct	5	4	7	47	37	407
Effective use of technology	11	14	12	21	42	369

Note: Primary Data

The result of the analysis of best practices of online class is presented through the table. Rank given by the respondents to each statements were found out by COUNTIF function and score for each statement was calculated using SUMPRODUCT function. Statements having least SUMPRODUCT score indicate that it is more advantageous. Thus, with respect to the best part of online classes comfort of being at home comes first as its SUMPRODUCT Score is the least and ease of conduct comes last as its SUMPRODUCT Score is the highest. The result made it clear that the stakeholders prefer to attend or handle

their classes at a convenient place. In case of teachers or students who are staying far away from the educational institution have to travel long distance to reach the college and the physical illness and other contingencies also interrupt them from reaching the institution. All these problems are covered through online classes as it offers the advantage of being at home but the fact can not be ignored that conduct of online classes is not easy as classroom based classes as the stakeholders have to take care of infrastructure, network coverage, distractions from family members during the classes etc. Hence, conducting online class is not an easy task.

Table 3
SUM PRODUCT Score of Disadvantages of Online Classes

Disadvantages	1	2	3	4	5	Score
	(=COUNTIF(range,criteria))					(=SUM PRODUCT(array1,[array2],array3),....))
Online classes are less effective	31	29	20	16	4	233
Less face to face communication and interaction	26	16	25	19	14	279
Difficulties in assessing students and providing adequate feedback	16	8	19	14	43	360
Network problems	15	30	26	24	5	274
Not useful for handling practical sessions	13	20	10	18	39	350

Note: Primary Data

The result of the analysis of the worst part of online classes is given in table 3. Statements having least SUMP RODUCT score is the worst part of online class and vice versa. Lack of effectiveness is the worst part of online classes as its SUM PRODUCT Score is the least and difficulties in assessing students and providing adequate feedback comes last as its SUM PRODUCT Score is the highest.

In the absence of face-to-face interaction and the physical presence of teachers and students in a common place the online classes became less effective. Teachers are efficient in handling and assessing their students through online mode. The technological advancements are sufficient enough for the teachers to assess their students and provide adequate feedback during online classes.

Objective 3: Physical and Psychological Health Issues resulting from online classes

Review of Literature

ICT-based education causes some health-related issues such as eye-strain, back pain, lack of movement, and even mental disorders connected predominantly to spending long periods of time working with computers (Zounek & Sudický, 2013). Teachers are facing multifarious discomforts in the spheres of their work and family life during the pandemic period, which will cause conflict with their family life and within their other relationships. It will cause problem with

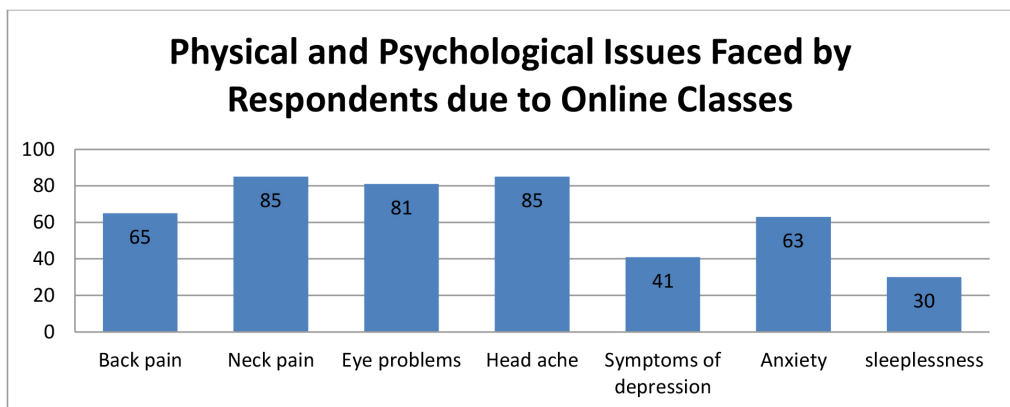
their psychological well-being and with the degree of their QWL. (Thomas et al, 2020). Back pain and eye pain are common issue for teachers as a result of these online classes (Dangal & Maharjan, 2021). Online class taker teachers are having higher physical illness; such as headache, eye-problems, Shoulder and back pain, stomach-related problems etc., in comparison to without online class taker teachers but online classes do not influence the psychological health of the teachers (Kumari, A.2020) which is contrary to the study result of (Hunt & Eisenberg, 2008) that long-time use of electronic devices are harmful to one’s physical and mental health.

Looking into the effect of online classes on students’ health, the most common issues seem to be eye pain and back pain, and headache. A larger percentage of students are reported to have headaches (Dangal&Maharjan, 2021). Weak interpersonal actions, alienation from real world etc. cause psychological problems to learners (Sahu, 2020). Female students, younger students, specifically those in the age group of 17 to 18 years, and those who are staying alone are experiencing higher stress sue to online classes as compared to that of their counterparts.

Analysis of Survey Data

The graphical representation of Physical and Psychological Issues Faced by Respondents due to Online Classes were given in figure3.

Figure 1 Physical and Psychological Issues Faced by Respondents due to Online Classes



Note:Primary Data

Figure 1 shows that neckpain and headache are the common issue for teachers and students due to online classes. 85 per cent of respondents are experiencing neck pain and headache while 81per cent of the respondents are having eye related problems due to the use of laptops or mobile phones for a long time for online classes. Most of the stakeholders are using mobile phones for attending classes and the seating arrangements may not be straight and scientific looking down to the phone for a long time may result in neck pain. A safe distance of the device from the eyes may not be kept by the users which may result in eye-related problems. From the result, it can be interpreted that the constant use of mobiles, computers and laptops for a long time creates various types of health issues to its stakeholders. Compared to health issues

symptoms of psychological problems are found less among the respondents. Only less than half of the respondents had sleeplessness or other symptoms of depression but the anxiety was a common issue among 63per cent of respondents.

Testing of Hypothesis

Four hypotheses were framed for assessing the physical and psychological health issues faced by teachers and students with respect to online classes. These hypotheses were tested with the help of Mann Whitney U test. The hypothesis and test results were given in table 3 to 6.

H₀₁: There is no significant difference between physical health issues suffering by students and teachers.

Table 4
Physical Health Issues to Students and Teachers

	Physical Health Issues
Mann-Whitney U	1125.500
Wilcoxon W	2400.500
Z	-.864
Asymp. Sig. (2-tailed)	.388

Note: Primary Data

There is no evidence to support a difference between teachers and students regarding their physical health issues.(U=1125.500,N1=50, N2=50, p=.388 two-tailed).Hence null hypothesis is failed to reject. The physical issues are common for both teachers and students as both the categories have to sit for long hours continuously looking to electronic devices which can cause severe health issues.

H₀₂:There is no significant difference between male and female with regard to their physical health issues.

Table 5:
Physical Health Issues to Male and Female

	Physical Health Issues
Mann-Whitney U	771.500
Wilcoxon W	3186.500
Z	-2.235
Asymp. Sig. (2-tailed)	.025

Note: Primary Data

The Mann Whitney U test revealed a significant difference between male and female regarding their physical health issues.(U=771.500,N1=31, N2=69, p=.025 two-tailed). Hence null hypothesis is rejected. Hence, can be interpreted that gender is playing a significant role in the physical health issues of respondents. Health issues like back pain can be more severe to female respondents than their male counterparts which can be the cause of difference between both groups.

H₀₃:There is no significant difference between psychological health issues suffering by students and teachers

Table 6
Psychological Health Issues among Students and Teachers

	Psychological Health Issues
Mann-Whitney U	758.500
Wilcoxon W	2033.500
Z	-3.410
Asymp. Sig. (2-tailed)	.001

Note: Primary Data

The Mann Whitney U test revealed a significant difference between teachers and students regarding their psychological health issues(U=758.500,N1=50, N2=50, p=.001 two-tailed). Students have more psychological issues compared to that of teachers.As the students are the beneficiaries of online classes the interruptions during the classes affect their mental health, they also have to bear the tension of exams. All of these lead to more psychological stress to them. Hence null hypothesis is rejected.

H₀₄: There is no significant difference between male and female regarding psychological health issues

Table 7
Psychological Health Issues among Male and Female

	Psychological Health Issues
Mann-Whitney U	841.000
Wilcoxon W	1337.000
Z	-1.714
Asymp. Sig. (2-tailed)	.087

Note: Primary Data

The Mann Whitney U test revealed that difference between male and female regarding their psychological health issues cannot be considered as significant(U=841.000,N1=31, N2=69, p=.087 two-tailed). It can be inferred from the result that gender is not playing a significant role in the psychological health issues of respondents. Hence null hypothesis is failed to reject.

Conclusion

The COVID-19 pandemic has severely affected the education system across the world. Educational institutions were temporarily closed in an attempt to control the spread of Covid-19. Teachers were instructed to shift to online mode of teaching to prevent academic loss to students. Online classes are become the new normal in the higher education system having its own merits and demerits.

The comfort of being at home is the best part of online classes to teachers and students. Lack of effectiveness is the most important disadvantage of online classes. The constant use of mobiles, computers and laptops for a long time creates various types of health issues both physical and psychological, for the respondents. Back pain, neck pain, eye problems, and headache are common issues for both teachers and students. Online classes compel teachers and students to sit a long time in front of laptops and mobile phones, which causes back pain and neck pain. The brightness and radiation of devices cause eye problems, headache etc. No difference was found between health issues faced by teachers and students. Both the categories are vulnerable to the health issues resulting from online classes. Coming to the psychological issues symptoms of depression, anxiety and sleeplessness were more common among students than teachers. The study showed that in spite of the advantage of being flexible and comfortable, online classes have its own demerits, which make it not much interesting for their stakeholders. It is only a temporary solution for the time being but would never be a permanent replacement of the traditional mode of teaching-learning. A hybrid system which combines the traditional and online classes can integrate the advantages of both the systems can be used in future by the academic community to make the teaching-learning process more effective and interesting.

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