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Natural Volatiles & Essential Oils

Sustainable Teaching and Learning on Digital Platform in the Higher Education Sector

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Abstract

The outbreak of the pandemic - Covid-19 has reoriented the landscape of human perceptions towards life. We started finding novel ways of survival; first for the lives and the second for the livelihoods. The grim reality has posed several uncertainties and unanticipated consequences. The Governments worldwide have been struggling for finding the innovative ways of saving the lives. Physical distancing has confined us in the four walls of our dwelling. An electronic paradise of digitization with high-speed internet is the new normal. In education, this scenario has compacted the place of classrooms and transformed into the virtual platforms like Zoom, MS-Teams, Skype & Google Meet to name a few. The reflections now emerge are: Can these platforms offer sustainable teaching and learning to all the stakeholders? Can the institutions of higher learning transform the digital platforms as an asset and value addition to the institutions and their stakeholders respectively? The researchers, in this research have explored the experiences and opinions of various stakeholders on the effectiveness of digital teaching and learning. The results of this study can be used by the governments, policymakers, and higher educational institutions to have an insight on how to utilize the digital platforms for sustainability.

Keywords: Covid-19, Digital Education, Virtual Platforms, Sustainability, Digital Teaching and Learning

1. Introduction

The world business clock came to a halt due to the outbreak of Covid19.The Gross Domestic Product (GDP) has shrunk due to its hit, causing business closures throughout the world. The Governments of respective Countries had to bring various reforms in their policies to manage the containment and the spread of the virus and also the subsequent adverse impact on the economy as a whole. Instead of going out or improving their financial stability, people started focusing on saving their lives by personal care where lives got priority over livelihood. (Keogh-brown et al., 2020). This pandemic affects differently in various sectors of society. Healthcare workers had to extend their working hours by risking their lives. At the same time, airline, travel & tourism industries were at a standstill position globally. The global education system had to find new ways of operations and functioning, switching from offline mode to online mode. Face masks, sanitizer and social distancing have become the new normal, impacting the business models adversely in broader ways. All organizations have re-framed their strategies to fit with social needs. Many well-known firms faced bankruptcy, and many have reduced their employee count (Donthu & Gustafsson, 2020).

Covid-19 has wedged the global education system differently. It brought many changes to the teaching and learning fraternity. During the covid-19 pandemic, virtual platforms have become an integral part of the learning and teaching system (Aucejo et al. 2020). Pedagogical chaos associated with technical aspects is a significant issue witnessed during the Covid-19 Pandemic. In addition to this, the pandemic increased the inequality in the education sector due to techno-based education. Many teachers and students lack the skills to use the digital platforms for teaching and learning purposes (Béché 2020).Traditionally we believed that education is not the one to be fixed with technology, but covid-19 brought us the scenario of a techno-based education. Does this teaching-learning system offer the fundamental element of education other than mechanically producing graduates? - Is the pressing question that arises while switching from offline to online (Teräs et al. 2020).

Sustainable learning and teaching are about integrating the principles of sustainability into the system. When the system is sustainable, both the instructor and the student will enjoy the sustainable curricula and the sustainable methods (Hays and Reinders 2020). Sustainability becomes a business asset, if the organization makes it more dynamic. To convert sustainability as an asset, the organisation requires ample dynamic capabilities (Liboni et al. 2016). In a higher education institution, teaching and learning are the core of the value creation process; hence to convert sustainability as the asset of a higher education institution, both teaching and learning should become sustainable (Teräs et al. 2020). Covid 19 has interrupted sustainable teaching and learning in multiple ways due to switching from offline to online platforms. This study aims to understand while operating in a volatile, uncertain, complex, ambiguous (VUCA) environment, how an organization can convert sustainability as an asset by developing a digital platform for sustainable teaching and learning. For that sake, the perception and experience of stakeholders play a crucial role. While engaging on a digital platform, what is the real-life experiences and what leads to satisfaction or otherwise. The study empirically explores the stakeholders' views and understands the factors that impact positive teaching and learning experiences in an online platform.

2. Literature Review

Hit by the covid-19 in the education sector is different in different parts of the world. It brought many changes to the teaching and learning fraternity. During the post covid scenario, online platforms have become an integral part of the learning and teaching system. Students and the faculties face different sets of challenges. Many faculties have lost their jobs due to the pandemic at the same time students experienced delayed graduation and many have lost their internship or job offers (Aucejo et al. 2020). Online platforms helped the universities and students in completing their portions on time, yet there are drawbacks of online education in developing countries. Lack of resources, poor national infrastructure, course delivery problems are the common issues associated with online education. In addition to these, problems faced by students are many which are associated with their domestic affairs, mental health and related to their inflexibility to adopt the online platform (Oyedotun 2020).

In many countries, the government took initiatives to incorporate online education policies to cope-up with the challenges raised by the covid-19 scenario. In university-level education, online platforms raise multiple challenges in the areas of practical test, assessment, examination and

supervision of the thesis. (Hossain et al. 2021). Lack of support from the administrative staff and insufficient infrastructure to promote online education are the common issues that prevail in many Srilankan Universities. Skill enhancement programs among the students, faculties and administrative staff are essential to upgrade the quality of online education (Maqsood et al. 2021). A hybrid model can improve the overall quality of education during the Covid19 and can avoid practical issues (Rameez, Fowsar, and Lumna 2020).

Education is a significant service sector, teaching and learning are the two essential parameters of value creation and value addition in this sector. A sustainable service does not have any negative impact on the natural or social environment (Wolfson, Tavor, and Mark 2011). A sustainable education should follow sustainable teaching and learning practices. Teaching (theories, practice and systems) should be current and viable and should also bring a positive change. Learning should be continuous, enduring, and proactive. Sustainable learning is application-oriented and not intended for accumulation oriented (Hays and Reinders 2020). In a sustainable teaching and learning process, the curricula and teaching methodologies help learners to apply the knowledge in different scenarios during the life transition in this process, the educators should encourage the students, collaborative learning and help the learners with adequate skills and strategies for self-renovation and self-assessment (Ben-Eliyahu 2021).

Table A: Literature Reviewed at a Glance

Sl No	Impact of Covid19 on sustainable teaching and learning in higher education sector	Reference
1	Delayed graduation	(Aucejo et al. 2020).
2	Lost Internship opportunities	(Aucejo et al. 2020).
3	Lost job offers	(Aucejo et al. 2020).
4	Increased Inequality	(Béché 2020).
5	Pedagogical Chaos	(Béché 2020).
6	Non accessibility of basic amenities	(Béché 2020).
7	Lack of faculty engagement	(Teräs et al. 2020).
8	Lack of students engagement	(Teräs et al. 2020).
9	No proper teaching learning system	(Teräs et al. 2020).
10	Data security issues	(Teräs et al. 2020).
11	Rivalry among platform providers	(Teräs et al. 2020).
12	National infrastructure problem	(Oyedotun 2020).
13	Students' domestic affairs	(Oyedotun 2020).
14	Students' mental health issues	(Oyedotun 2020).

15	Inflexibility to adapt online mode	(Oyedotun 2020).
16	Issues to conduct practical test	(Rameez, Fowsar, and Lumna 2020).
17	Examination, assessment, supervision issues	(Rameez, Fowsar, and Lumna 2020).
18	Social isolation due to institution closure	(Gupta and Gupta 2020)
19	Lack of skill among the student and the faculty	(Gupta and Gupta 2020)
20	Faculty job lose	(Andaregie and Astatkie 2021).

From the reviewed literature, it is clear that Covid19 (an unexpected threat that arises due to the VUCA conditions of a business) adversely affected the sustainable teaching and learning process globally in multiple ways. How satisfied the students and teachers are with each other's performance? is an ambiguous question. Can the institutions convert the digital platform as a substitute for physical platform for sustainable teaching and learning irrespective of the presence or absence of the prevailing conditions? is a logical question to be addressed at present.

3. Objectives of the Study

To investigate how effective the transition phase of physical classes to online live or digital classes and had it impacted the multiple stakeholders in the process of teaching and learning in the higher education sector?.

To bring-forth the real experiences the stakeholders, especially the learners had and they had come across on various factors of the online or digital classes during the pandemic.

To analyse and interpret the outcome and infer the information on the pros and cons of online live or digital platforms as a substitute for physical classes and how to make it more sustainable in the days and years ahead.

4. Hypothesis

H_0 = Online Live / Digital Classes can act as a platform and a substitute for Physical Classes for sustainable teaching and learning outcomes.

H_1 = Online Live / Digital Classes cannot be offered as a substitute for Physical Classes to have sustainable teaching and learning experiences and outcomes.

The research findings reveal that digital platforms can act as the platform for sustainable teaching and learning; hence the alternative hypothesis is rejected.

5. Methodology

This study adopted an integrated approach. The researchers reviewed related literature and made use of empirical investigation technique using fact and evidence based analysis.

6. Data Collection and Analysis

Primary Data:

The Primary data were collected through the structured questionnaire, exclusively meant for this study, was circulated randomly among a few students ranging from Undergraduate till Postgraduate or PhD at various Universities or colleges in Bangalore.

Secondary Data:

The Secondary data were collected through a systematic literature review. The analysis gives avivid picture of the happenings on Online or Digital Classroom in the higher education sector during the pandemic.

7. Research Gap

The inference from analysis and interpretation of the review of related literature gives a clear picture of various problems and challenges confronted by all the stakeholders - the teachers and students - in teaching and learning through online live or digital classes. Now need of the hour is to make this platform a new normal for bringing a sustainable system of teaching and learning to meet and confront the unexpected and uncertain future equipping them with utmost readiness for which the researchers intended to shed some light on these phases of unexpected and uncertain upheavals.

8. Sampling

Sampling Design

The researchers had designed a structured questionnaire on Google Form for the purpose of conducting a survey in order to collect the primary data; incorporating the relevant questions which could cover various felt problems and challenges of Online or Digital Classes during the pandemic. The questionnaire was then circulated randomly among a few universities and colleges in an around Bangalore City seeking the unbiased responses of the participants.

Sampling Method

The method of Convenience-Random-Sampling was used in the process of collecting the data, analyzing and interpreting the results.

Population

Hundred and Seventy Five (175) questionnaires were circulated among the students and a few faculty members ranging from Undergraduates and Postgraduates of various streams and specialization

of studies (Bengaluru North University, R L Jalappa Institute of Technology, Government Ramnarayan Chellaram College of Commerce and Management, Bangalore City University, PG Centre, Mangasandra & Visveswarya Technological University) seeking their unbiased responses.

Sample Size

Among the hundred and seventy five (175 Nos.) participants whom the questionnaire was shared with; **Hundred and Thirty Eight (138 Nos.)** were responded by returning (submitting) the google form with complete details required in all respects.

9. Conceptual Framework

The concept of given hypothesis envisages the need of more and more explorations with concrete objectives in this area of investigation and in-depth analysis on the effectiveness of Online or Digital Classrooms in respect to the quality and levels of satisfactions for both the teachers and the students in the process of value creation for the institutions and value addition to all the stakeholders. The numerous variables involved in the process of boosting the benchmark in determining the efficacy and effectiveness have pivotal roles to play in the rapid changing scenarios of unexpected uncertainty and subsequent challenges. The challenges and risks posed by uncertainty to the structure and functioning of various systems and procedures have necessitated to contemplate for a new normal which could be apt to the changing scenario of any unprecedented outcome including the pandemic. The experiences undergone have urged to think of alternative solutions to such uncertainty and education is such a sector where such ramification becomes inevitable. Thus, the researchers delved into the core areas of various issues and challenges that could pose prolonged and lingering blocks, though unnoticed and seems insignificant, in the progress and sustainability of quality education wherein effective teaching and learning being one of the prime elements.

10. Data Analysis

Table 1. Gender-wise Respondents

Gender (M/F/Others)	Respondents (Numbers)	Respondents (%)
Male	57	41
Female	81	59
Total	138	100

Figure 1. Gender-wise Respondents
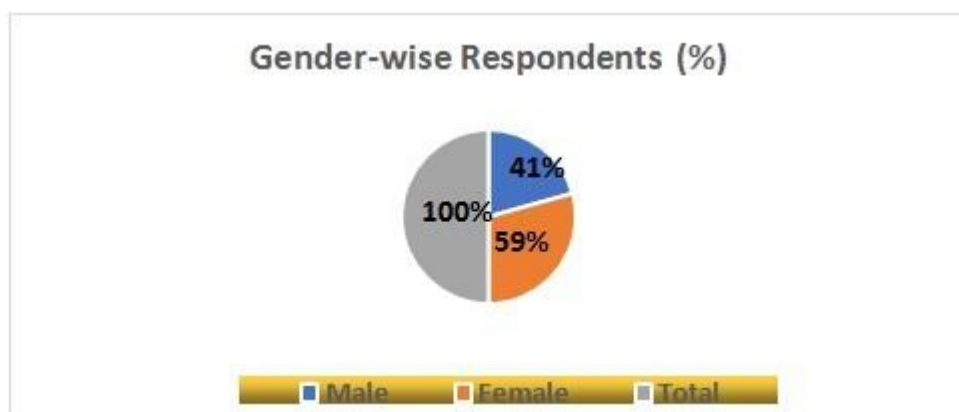
Table 2. Age-wise Respondents

Variables	Number of Respondents	% of Respondent
Age Bracket		
18 - 23	123	89
24 - 27	9	7
> 27	6	4
Total	138	100

Figure 2. Age-wise Respondents
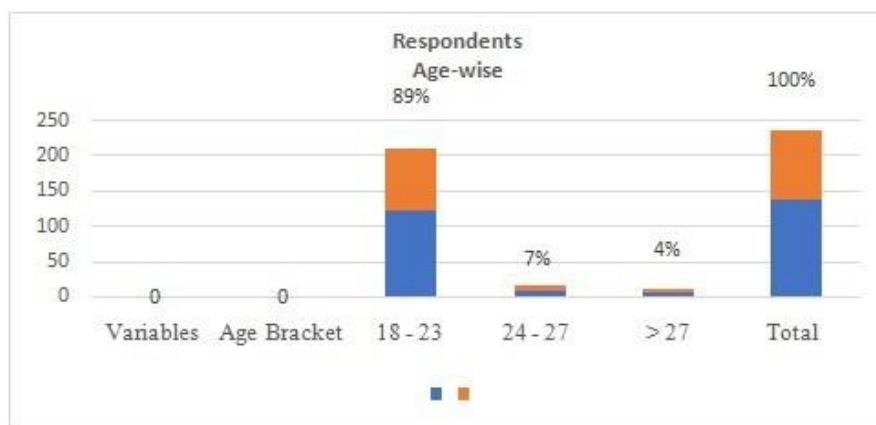
Table 3. Role-wise Category of Respondents

Category of Respondents	Number of Respondents	% of Respondent
Teachers	5	4
Students	133	96
Total	138	100

Figure 3. Role-wise Category of Respondents
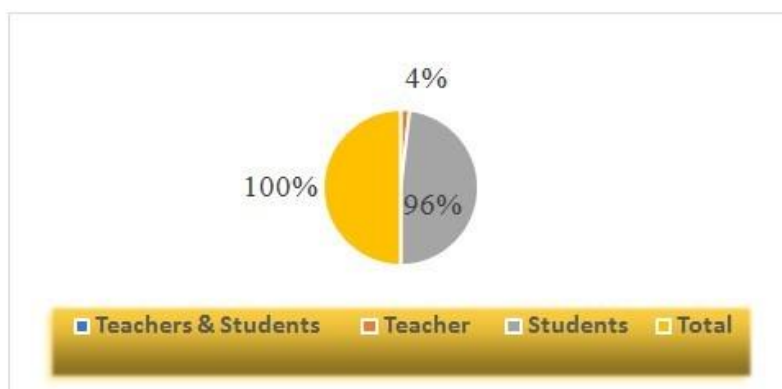
Table 4. Qualification-wise Category of Respondents

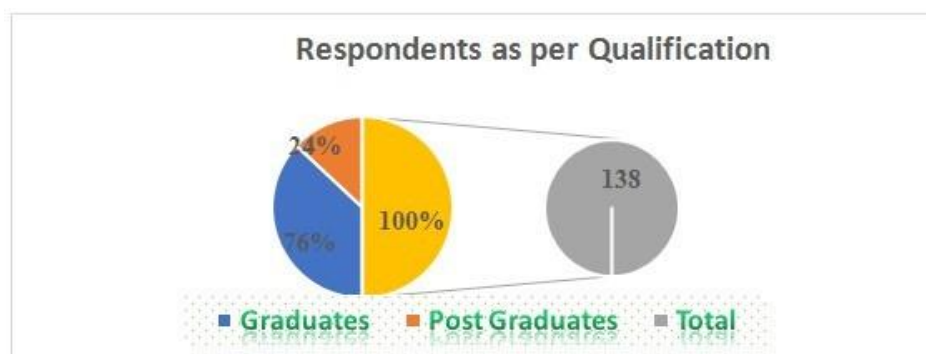| Category as per Qualification	Number of Respondents	% of Respondents
Graduates	102	74
Post Graduates	36	26
Total	138	100

Figure 4. Qualification-wise Category of Respondents

Table 5. Category as per stream or specialization of study

Category as per Stream of Study	Number of Respondents	% of Respondents
Engineering	83	60
Commerce	20	14
Arts	14	10
Management	9	7
Others	6	4
Traditional Science	5	4
Law	1	1
Total	138	100

Figure 5: Category as per stream or specialization of study
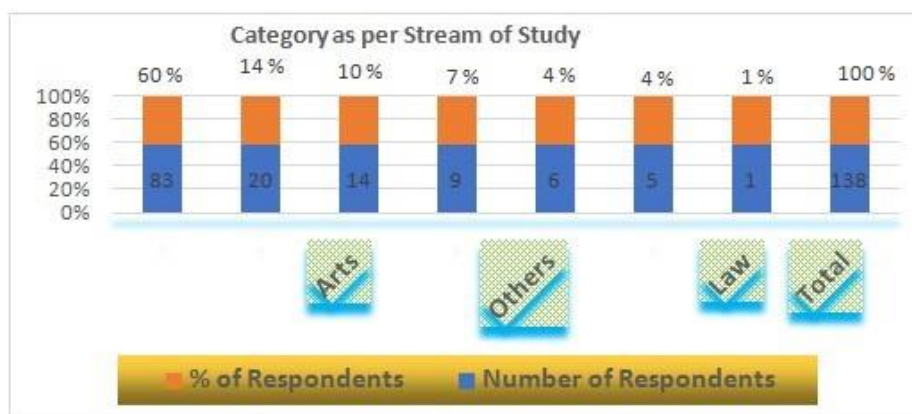
Table 6. Responses on Digital Classes over Online Classes

Digital Classes are better than offline Classes	Number of Respondents	% of Respondents
Disagreed	91	66
Agreed	26	19
Neutral	21	15
Total	138	100

Figure 6. Responses on Digital Classes Over Online Classes
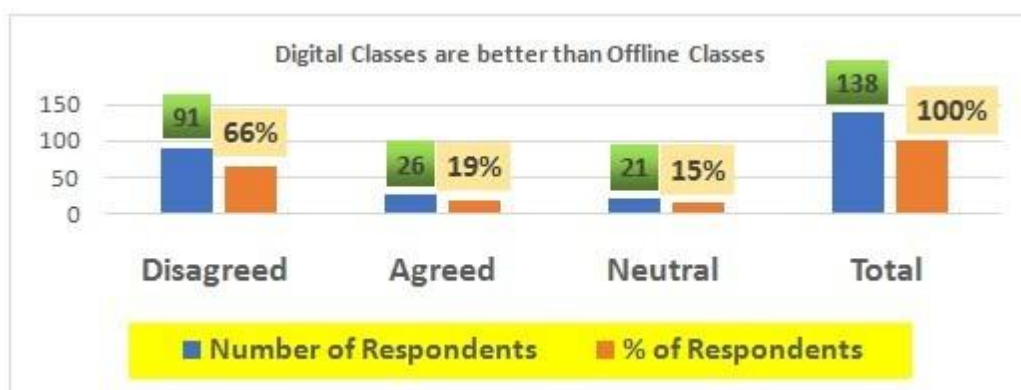
Table 7. Responses on Online Classes Save Time and Travel Cost

Online Classes save time and cost of travelling	Number of Respondents	% of Respondents
Disagreed	56	41
Agreed	60	43
Neutral	22	16
Total	138	100

Figure 7. Responses on Online Classes Save Time and Travel Cost
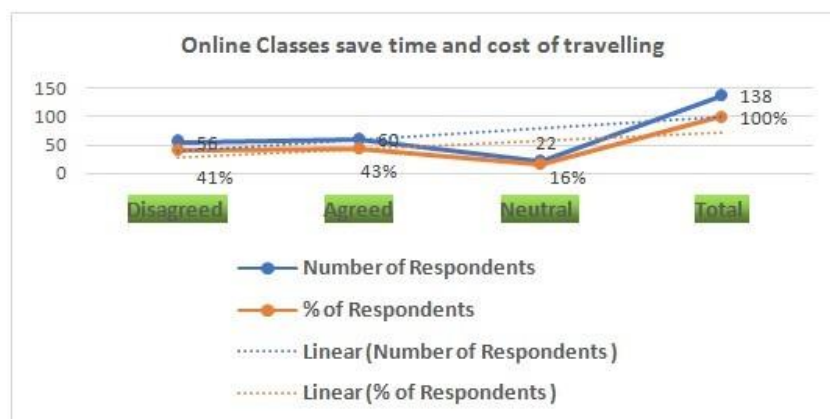

Table 8. Responses on Live Classes are Better than Recorded Classes

Live Classes are better than Recorded Classes	Number of Respondents	% of Respondents
Disagreed	48	35
Agreed	62	45
Neutral	28	20
Total	138	100

Figure 8. Responses on Live Classes are Better than Recorded Classes
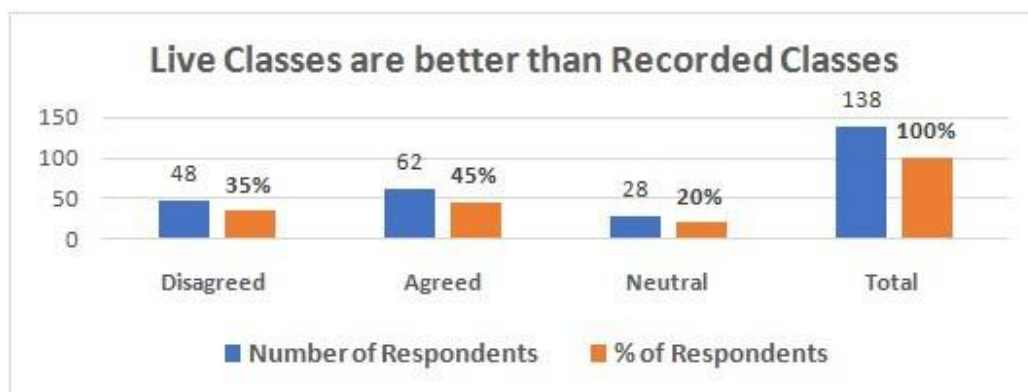
Table 9. Responses on Learners Pay Less Attention towards Recorded Classes

Learners pay less attention towards Recorded Classes	Number of Respondents	% of Respondents
Disagreed	24	17
Agreed	90	65
Neutral	24	17
Total	138	100

Figure 9. Responses on Learners Pay Less Attention towards Recorded Classes
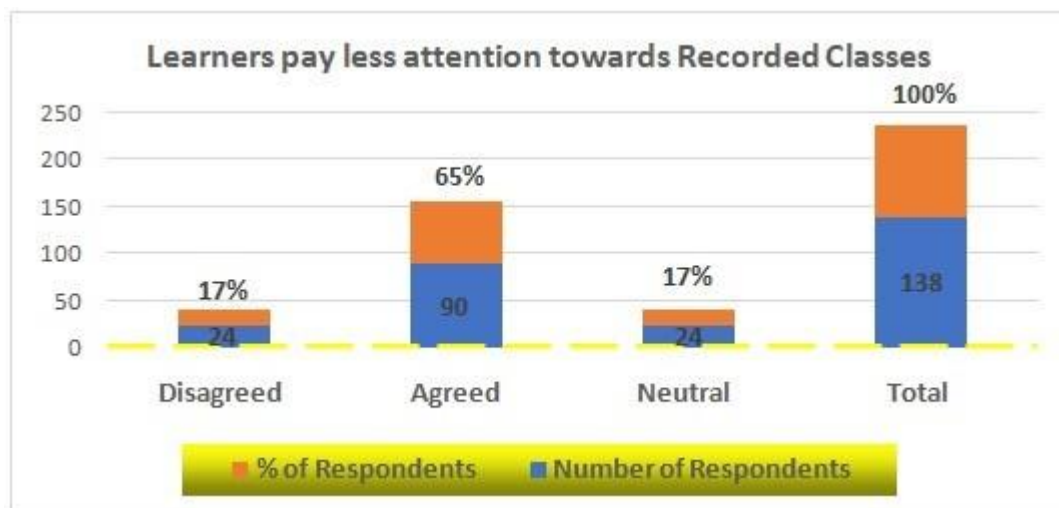

Table 10. Responses on Preference of Duration of Classes

40 Minutes Classes are better than 1 hr Classes	Number of Respondents	% of Respondents
Disagreed	23	17
Agreed	93	67
Neutral	22	16
Total	138	100

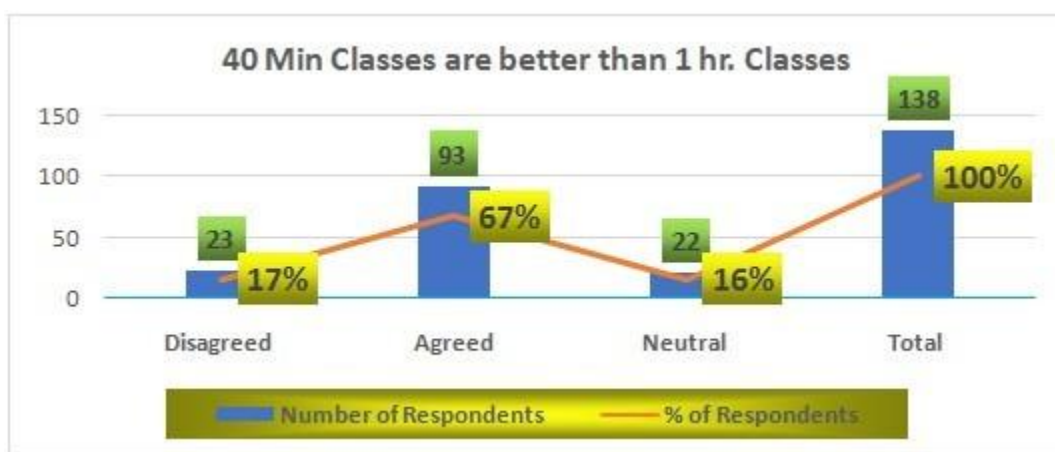Figure 10. Responses on Preference of Duration of Classes

Table 11. Responses on Teachers' Presence (Video) gives Confidence and Clarity

Teacher's Presence (Video On-Mode) gives confidence and clarity	Number of Respondents	% of Respondents
Disagreed	25	18
Agreed	89	64
Neutral	24	17
Total	138	100

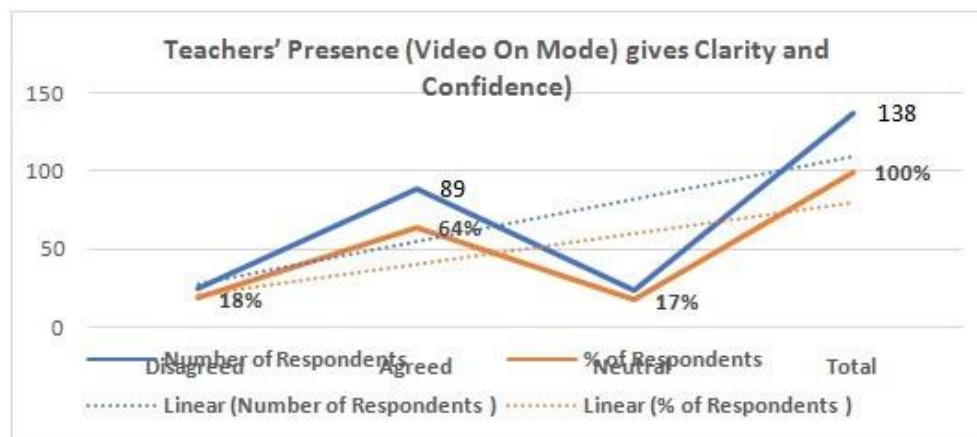Figure 11. Responses on Teachers' Presence (Video) gives Confidence and Clarity

Table 12. Responses on Most Preferred and Widely Used App for Online Class

Most Preferred and Widely used App for Online Classes	Number of Respondents	% of Respondents
Zoom	91	66
Google Meet	38	28
MS Teams	5	4
Others	4	3
Total	138	100

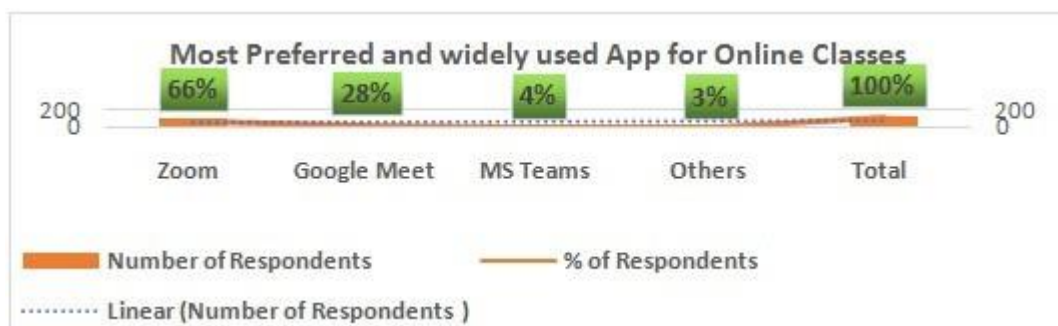Figure 12. Responses on Most Preferred and Widely used App for Online Classes

Table 13. Responses on Physical Classes give Better Social Bonding and Emotional Stability

Physical Classes help to have better social bonding and emotional stability	Number of Respondents	% of Respondents
Disagreed	12	9
Agreed	115	83
Neutral	11	8
Total	138	100

Figure 13. Responses on Physical Classes give Better Social Bonding and Emotional Stability
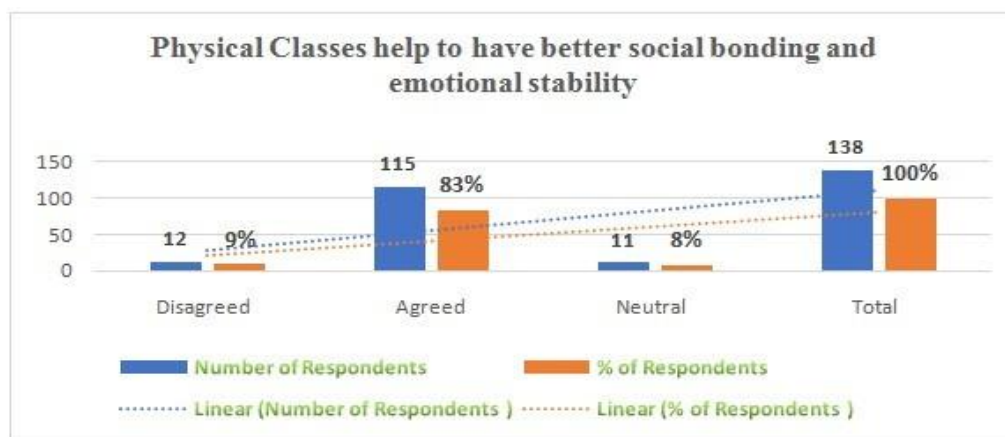

Table 14. Online Classes Help to Learn Technical Subjects having Practical Sessions

Online Classes help to learn technical subjects having practical sessions	Number of Respondents	% of Respondents
Disagreed	57	41
Agreed	57	41
Neutral	24	17
Total	138	100

Figure 14. Online Classes Help to Learn Technical Subjects having Practical Sessions
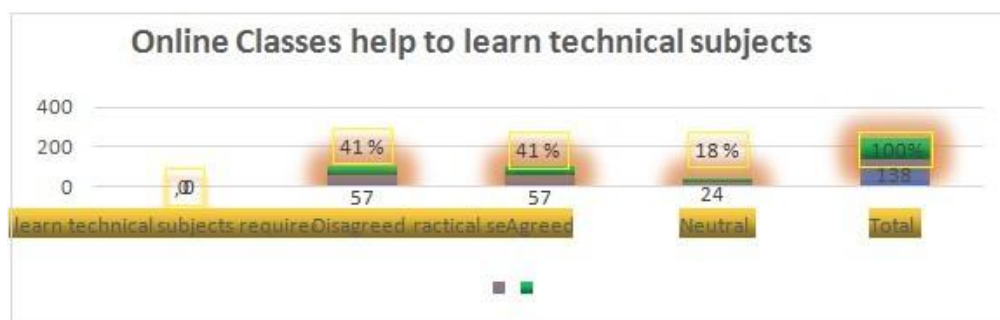
Table 15 Problems and Challenges Confronted During Online Classes

Problems and challenges confronted during Online Classes	Disagree (%)	Agree (%)	Neutral (%)
Poor Network	14	72	14
Lack of Clarity on Content	22	61	17
Lack of Interaction	28	49	23
Aloofness	39	43	18
Eyestrain	14	72	14
Fatigue	18	57	25
Lack of Teachers' Enthusiasm	38	33	29

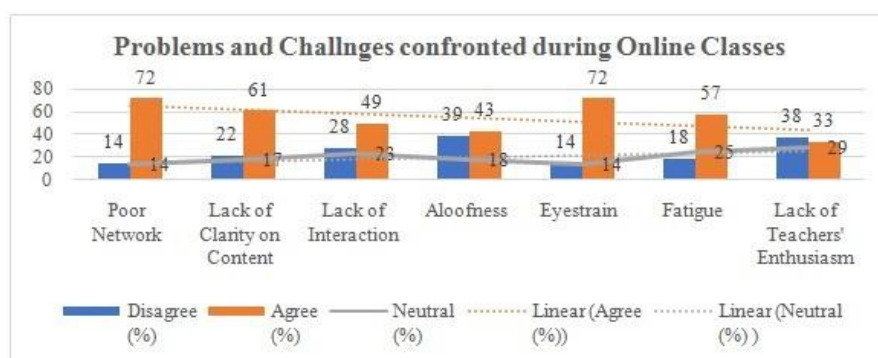Figure 15. Problems and Challenges Confronted During Online Classes

Table 16. Responses on Explorable Possibilities For Sustainability

Explorable Possibilities for Sustainability	Disagree (%)	Agree (%)	Neutral (%)
Regular time table with fixed time (Ideal time: 9:00am to 12:00noon)	14	82	4
Test MCQ Google Form	29	60	11
Regular Assignment helps effective learning & up-skilling	22	68	10
Extracurricular Activities (GD, Quiz, Debate, Extempore, Elocution etc)	28	49	23
Teachers' Energy and Enthusiasm	24	47	29

Figure 16. Responses on Explorable Possibilities for Sustainability

Data Interpretation

1. Table & Chart 1: Depicts the category of respondents on the basis of gender. Out of total 138 respondents actively participated in the survey; 82 (59%) were female and remaining 56 (41%) were male.

2. Table & Chart 2: Shows the respondents' on the basis of age. Out of total 138 respondents, 123 (89%) were in the age group of 18-23 years.

3. Table & Chart 3: Illustrates categorization of respondents on the basis of their roles - teachers and students. Out of total 138 respondents actively participated in the survey; 5 (4%) were teacher-students and remaining 133 (96%) were students.

4. Table & Chart 4: Explains about the categorization of respondents on the basis of their educational qualification (pursuing course). 102 (74%) were Graduates & remaining 36 (26%) were Postgraduates constituting the total respondents of 138.

5. Table & Chart 5: Describes the categorization of respondents on the basis of their course or stream of studies. Out of the total 138 respondents, 83 (60%) belong to Engineering Stream, 20 (14%) were from Commerce, 14 (10%) were of Arts and Management constitute 9 (7%).

6. Table & Chart 6: The respondents' unbiased views and perceptions were collected and analyzed on whether Online Classes are better than Physical (Offline) Classes. 91 (66%) out of total 138 were of the opinion that Offline Classes are better than Online. However, 26 (19%) opined that Online Classes are better than Offline and remaining were kept neutral to their opinion.

7. Table & Chart 7: Exhibits the respondents views on whether the Online classes save time and cost of travelling. Out of total 138, 60 (43%) have supported the statement and 56 (41%) didn't

agree on this and remaining 22 (16%) were neutral to this statement.

8. Table & Chart 8: The researcher were keen to understand whether Online Live classes or playing prerecorded content is preferable to the students and designed a question on whether they like Online Live or prerecorded, 62 (45%) out of total 138 were of the opinion that Online Live Classes are better than prerecorded one. However, 48 (35%) preferred for prerecorded classes and remaining 20% didn't show any preference on this statement.

9. Table & Chart 9: Shows the learners aptitude towards recorded classes. 90 (65%) out of total 138 respondents agreed the fact that learners pay less attention to the prerecorded class but 24 (17%) were of the opinion that prerecorded classes can be effective and remaining 24 (17%) were neutral to this statement.

10. Table & Chart 10: Depicts the preference shown by the respondent on their choice durationof the Online classes whether 40Min Class is ideal or 1hr. Out of total 138 respondents actively participated in the survey; 93 (67%) were of the opinion that 40 Min class is ideal and 23 (17%) have opined that duration of 1 hr is ideal and remaining 22 (16%) were neutral to this question.

11. Table & Chart 11: Illustrates whether the learners prefer to get the video of live class including the visibility of the teacher. Out of 138 respondents, 89 (64%) were of the opinion that teachers' presence throughout the class gives confidence and clarity on the subjects. 25 (18%) have disagreed on this statement and the rest 24 (17%) remained neutral to this question.

12. Table & Chart 12: Shows the respondents' use and opinion about the most preferred and widely used App for attending the Online Classes. Out of total 138 respondents, 91 (66%) were the users of Zoom; 38 (28%) use Google Meet for attending their classes and 5 (4%) were using MS Team and the remaining 4 (3%) were in use of some other Apps.

13. Table & Chart 13: Illustrates whether the respondents agreed to the question - Whether Offline classes cement better social bonding and emotional stability in them. Out of total 138 respondents, 115 (83%) have agreed on this. 12 (9%) showed their disagreement and the rest 11 (8%) remained neutral to this question.

14. Table & Chart 14: Vividly shows the respondents views on whether the Online classes are adequate to teach technical subjects that require frequent practical sessions. Out of the total 138 respondents, 57 (41%) agreed to this and equal number i,e., 57 (41%) disagreed on this. Meanwhile, the remaining 24 (17%) kept themselves neutral to it.

15. Table & Chart 15: The researchers were keen to understand various problems and challenges confronted by the respondents during the Online Classes and sought their responses on a few relevant and common problems and challenges. 72% had poor or unstable network, 43% had the problem of aloofness, 72% were suffering from eyestrain, 57% were feeling fatigue, 33% felt of the lack of teachers' full engagement, 61% were of the opinion that clarity of content is the major problem and 49% felt lack of interaction between and among the students and teachers.

16. Table & Chart 16: The researchers in the end wanted to understand and explore various ways to find the possibilities to mitigate various pitfalls and designed a few questions seeking their opinions and perceptions on those areas. 82% of the total respondents were of the opinion that regular timetable with fixed timing can create enthusiasm in learning; 49% of the respondents were of the opinion that even extra-curricular activities such as Debate, Group Discussion, Quiz Competition, Extempore, Elocution etc., can be conducted online. The most preferred timing for Online Classes opted by 82% of respondents is in between 9:00am and 12:00noon. The respondents were of the opinion that MCQs Test online by Google Link with set timing is ideal and getting regular assignment on related topics along with online classes will enhance their knowledge, interest and skills.

Acknowledgement

Statement of Intended Contribution

The adverse impact of Covid-19 on almost all walks of life has given the world an opportunity to learn how a pandemic can paralyze the hitherto normal systems, processes, structures, and functions. The Education sector is one among such sectors wherein to adjust to the new normal was a herculean task to all the stakeholders initially. The pandemic has cautioned us for having some effective superior technology-supported digital platforms which could imbibe the actual practices of teaching and learning remotely.

The researchers in this paper intend to bring out a few new insights as practically feasible ways of teaching and learning. The quality, effectiveness, and efficacy of the methods used in teaching the contents, the tools used to impart the knowledge, and the outcome derived from the teaching and learning are the parameters assessed and apprised. The survey method used in this research could collect the teachers' and learners' responses on various elements which could directly or indirectly influence the pedagogy of online or digital education.

The gist of the relevant questions asked in the questionnaire was centered around one concept of whether the methods commonly used were effective and the tools used were productive and could apply a balanced psychological approach. The dictums 'digital is future' and 'future is digital' have paved immense opportunities and potentials for the stakeholders in general and researchers in particular to explore various hitherto uncovered areas and also to have an evolved and alternate system in accordance with changing needs and demands.

Conclusion

The present research could explore and investigate various aspects of both myths and reality on the Online / Digital Classes. The myth is that online is ineffective and students will be unable to follow and cope-up with the teacher. The new normal of pandemic and post-pandemic scenario has, of course, posed an unprecedented demand of both structural and functional shifts in almost all walks of life. People, as a general trend of becoming more introvert during such situations, were left with no choice but had to accept the confinement of constrained catastrophe.

The hitherto had business motives paved the way for self protection and seeking of urgent bare minimum requirements of food for survival. The power of currency and influence proved to be futile in front of the scarcity of oxygen, ventilator and ICU Beds. An unprecedented uncertainty started making everything risky and posed a serious threat and challenges. The needed norms of confinement coupled with containment created a crushed new norms of masking, sanitizing and physical distancing with frantic search of oxygen. Health of individuals became a major worry and concern and health care of the individual, country and world started putting tremendous pressure and burden on the Governments and healthcare system as a whole.

Educational Institutions became vulnerable to the pandemic creating a few containment zones and new clusters of the epidemic. In this scenario there was no forethought of wait and see but had to close-down with no choice left-out. Such an uncertain future created a lot of apprehensions and forced to find an alternative way of finding new method of imparting knowledge online.

The findings of the present research have shed some lights on the need of finding an alternate way of education; beyond the normal way of teaching and learning during normal time before the pandemic. The use of electronic gadgets, depending on high speed internet, for e-shopping, e-payment, e-commerce, e-healthcare, e-marketing, e-pharmacy etc.,

The responsibilities and accountability of imparting quality education is bestowed upon all the stakeholders. The quality of online teaching and learning can be improved with consistent monitoring and feedback system. The facilities of stable internet connection with high speed and bandwidth can resolve the problems of poor network connection to a certain extent. Regular interaction with students, extra curricular activities like Quiz, Debate, Group Discussion, Elocution, extempore, giving them regular assignments related to the topics taught in the class along with online classes, periodic assessment online by way of Google Form MCQs / descriptive.

The overall responses on various factors related to the effectiveness of Online Classes over Offline or physical classes have inferred and suggested various measures could be taken to make the teaching and learning sustainable even in any adverse, unprecedented and uncertain future.

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