Alternatives Delivery Channels of Education-The readiness of Pakistani HEIs

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Abstract

21st Century, is century globalization mean interpersonal connectedness in all field of life consequently many time globalizations influenced as catalyst of paradigm shifts and eventually or gradually leads Social, cultural, political, economic, educational and health integration. Currently this globalized world facing the health emergency with abrupt outbreak of COVID -19. Pakistan is also facing it and we were not ready with backup plans in major field of life and industries including education.

The research questions focused primarily Readiness in term of instructions/universities, faculty , students , technological facilities , environment , on line library system , Knowledge & skills and in term of main stakeholders as well .There is a great need of this research on an urgent basis . Keeping in view researcher decide to initiate with above thematic area. In fact this was descriptive by nature because explore the many variables related to main theme whereas this may be mix sort of research by method . The Population will be all higher education institutions of Pakistan , Sample will be all from faculty and students of HEI, Pakistan, while sixty percent institution of HEIs were selected by convenient random sampling as sample . Data was collected form faculty , students , heads , deans of HEIs . HEC , Universities & boards , main stakeholders was included as well for the data collection . Open & close ended Questionnaire with likert Scale was used as a tool . Interviews was taken as well . After discussion & piloting tools were finalized for qualitative data theme/content analysis was used while quantitative data was analyzed statistically. The research revealed not only the readiness levels of alternative delivery channels since recommend the setting up and help in the development of mainstream education planning and quality standards of online education system as well .

Keywords : COVID-19 Pandemic, E-Learning in Higher Education, Educational Readiness, Technological Resources for Education

Introduction & Background

We educationist are always treated as problem solver with rapid response against the problems, especially in 21st century. However, this time we were neither informed nor ever predicted such situation of covid-19; which incredibly attacked as global pandemic in more-than 212 countries worldwide, affected 4.0Million+, death 272K+ (Worldometer, May 2020; Google.com, April 2020; Our World in data, May, 2020; Government of Pakistan, May 2020) . This type of Novel corona virus 2019(nCov 2019) never ever seen by researchers in their life before. By keeping this all in view we have taken initiatives with respect to our stakeholders (faculty, students, non-faculty staff) time to time by analyzing the situation in HEI (Higher education Institutions). Readiness in education sector, especially HEIs, has been challenged by this COVID-19, however we never give-up and gave academic responses promptly but were less effective because of no readiness at HEIs and HEC, as compare to developed countries ( ). Readiness simply means our preparedness before any reaction of action to respond promptly in advance, whereas some other countries have ran their education activities online too during the coronavirus (HEC, April 2020). In this epidemic, Readiness has opened the eyes of HEIs, especially universities and HEC (Higher Education Commission). There are many question related to the readiness of the study have been raised such as university readiness, faculty readiness, technology readiness, library readiness, student readiness etc. According to Brookings (April 2020), Pakistan is not the only the country who affected with this global outbreak, however, 166 countries have closed their education sectors (Schools/Colleges/HEIs) to avoid or minimize further contagion. On the other hand, it has affected quality education directly and indirectly. Readiness of HEIs or education sector need to be within their resources available otherwise another challenges will come across and to be faced. Digitalize or technology readiness is another challenge for education sectors in developing countries to afford and train the stakeholders in such severe unprecedented global disruption situation. Majority of our systems are based on radio and television infrastructures instead of education technology investments (Brookings, April 2020).The broad development of digital technologies in education particularly in higher education has initiate the necessitate of valuable technological tool for quality education and effective learning . (Blau & Avdiel, 2020). Teachers are the great and heart of universities or HEIs, and before focus was merely on qualification and motivating them. However, now their (faculty) readiness would be needed with respect to the rapid academic response to COVID-19. First and foremost, it is responsibility of government to ensure that faculty must be paid continuously otherwise faculty or teaching and learning readiness cannot be obtain during or after the coronavirus to maintain their health and life. According to Gallup (April 2020), 65 to 80% of students readiness was not found with lack of interest, facilities, untrained, lack of resources, and many other reasons key reason is not use to of e-learning, e learning is effective for active learning and appropriate for learning process without formal class rooms (Ali,Hossain & Tania,2018) which need be significantly considered during student readiness.

The basis of f this research project is how education institutions triggered the Teaching and Learning process by e-learning or other means especially if such pandemic happens and continues for unknown/ long period of time. This study will also reflect the realities of established institutions and

their performance within available resources especially for claims on e-learning; The emphasis and nature of the research project would be based on stakeholders, assets, and other resources available with regards to the education institutions such as higher education institutions (HEI) and/or universities.

Additionally, this further can be elaborated towards the online or electronic e-teaching and learning process related to teacher, students, policy and guidelines, course/subject information, software, learning management systems, and facilities provided by university as whole. Therefore, this challenge faced from COVID-19 situation at university level can be dealt in a proper and cost effective way to achieve all objectives related to the stakeholders.

As per HEC Virtual Instruction Survey

"In Response to the COVID -19 pandemic *All Universities have agreed to start preparing their system to be able to offer effective online teaching as a substitute for regular classes"**

Are the universities are ready to respond COVID-19 pandemic effectively and in efficiently with less of online facilities such as software and other basic infrastructure. Do our institutions have faculty readiness and well trained teachers on online education continuation? Further to this, to ensuring the availability of course information is itself a challenge for universities whereas delivery of content through online mediums / platforms will also be probed to establish the readiness in LMS (Learning Management System); does our libraries have provide access to online resources related to relevant subjects such as course readings books and assignment etc. – this will also be checked. During the study we cannot avoid another two main significant factors such as technology and student readiness; Whereas, technology refers to the delivery of online classes up-to the mark; while on the other hand, student readiness refers to how they(students) can easily avail/access the online classes by technology and how they cope up if any obstacles come across.

It is no secret that alike the entire world, Pakistan was also taken aback with the sudden outbreak of COVID-19. The problem is Corona Virus Disease – 2019 (COVID -19) which basically relates to the medical and health sciences, and researcher are in the domain of social sciences of education sector. However, this corona virus epidemic has affected all including our education industry, primarily. We had never ever seen such a pandemic in form of the novel coronavirus (2019) in our life at all, which has truly affected education fraternity of Pakistan, and the world. There is no exact solution found as yet against this covid-19, but the quarantine and/or isolation with precautionary measures as advised by Government and/or health advisors is the only way prescribed by experts for lowering the curve of spread. Therefore, there are so many new questions which arose with respect to the education industry and challenges to cope up with this situation till the solution in form of some sort f remedy is available.

The study focus is on education industry, primarily higher education institutions (HEI) and/or

universities. This research study can be applied as well as action research which will definitely give solutions up-to the mark and standards of HEC Pakistan. Furthermore, which can be applied in other developing countries, and full or partial in developed countries during such outbreaks if any happen. Effective course of actions with respect to the study objectives suggested and recommended as per opinions and responses obtained from respondents of education industry. Indeed we are in developing countries, the study contribute by providing the solution(s) against the problems and which play role in socio-economic sectors of country. The results in the shape of strategies models and process to be followed by HEI/Universities to face the challenges such as COVID-19 or any other related.

Research Objectives

‣ To inquire the higher education institutions readiness level towards e- learning process as

   alternative.

‣ To Study the readiness of faculty & Students of HEIs towards e-learning.

‣ To identify required & available technology resources for e-teaching and learning.

‣ To find out the professional training needs of faculty for effective on line teaching.

‣ To investigate whether our libraries have course related materials and e-learning materials to

   teach SLOs of respective courses /semester or program.

‣ To analyze the readiness level of quality assurance mechanism of online teaching.

LITERATURE REVIEW

We educationist are always treated as problem solver with rapid response against the problems, especially in 21st century. However, this time we were neither informed nor ever predicted such situation of covid-19; which incredibly attacked as global pandemic in more-than 212 countries worldwide, affected 4.0Million+, death 272K+ (Worldometer, May 2020; Google.com, April 2020; Our World in data, May, 2020; Government of Pakistan, May 2020).

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raised such as university readiness, faculty readiness, technology readiness, library readiness, student readiness etc. According to Brookings (April 2020), Pakistan is not the only the country who affected with this global outbreak, however, 166 countries have closed their education sectors (Schools/Colleges/HEIs) to avoid or minimize further contagion. On the other hand, it has affected quality education directly and indirectly. Readiness of HEIs or education sector need to be within their resources available otherwise another challenges will come across and to be faced. Digitalize or technology readiness is another challenge for education sectors in developing countries to afford and train the stakeholders in such severe unprecedented global disruption situation. Majority of our systems are based on radio and television infrastructures instead of education technology investments (Brookings, April 2020).The broad development of digital technologies in education particularly in higher education has initiate the necessitate of valuable technological tool for quality education and effective learning . (Blau & Avdiel, 2020).

Teachers are the great and heart of universities or HEIs, and before focus was merely on qualification and motivating them. However, now their (faculty) readiness would be needed with respect to the rapid academic response to COVID-19. First and foremost, it is responsibility of government to ensure that faculty must be paid continuously otherwise faculty or teaching and learning readiness cannot be obtain during or after the coronavirus to maintain their health and life. According to Gallup (April 2020), 65 to 80% of students readiness was not found with lack of interest, facilities, untrained, lack of resources, and many other reasons key reason is not use to of e-learning, e learning is effective for active learning and appropriate for learning process without formal class rooms (Ali,Hossain & Tania,2018) which need be significantly considered during student readiness. The basis of f this research project is how education institutions triggered the Teaching and Learning process by e-learning or other means especially if such pandemic happens and continues for unknown/ long period of time. This study will also reflect the realities of established institutions and their performance within available resources especially for claims on e-learning; The emphasis and nature of the research project would be based on stakeholders, assets, and other resources available with regards to the education institutions such as higher education institutions (HEI) and/or universities. Additionally, this further can be elaborated towards the online or electronic e-teaching and learning process related to teacher, students, policy and guidelines, course/subject information, software, learning management systems, and facilities provided by university as whole. Therefore, this challenge faced from COVID-19 situation at university level can be dealt in a proper and cost effective way to achieve all objectives related to the stakeholders. Are the universities are ready to respond COVID-19 pandemic effectively and in efficiently with less of online facilities such as software and other basic infrastructure.

Do our institutions have faculty readiness and well trained teachers on online education continuation? Further to this, to ensuring the availability of course information is itself a challenge for universities whereas delivery of content through online mediums / platforms will also be probed to establish the readiness in LMS (Learning Management System); does our libraries have provide access to online resources related to relevant subjects such as course readings books and assignment etc. – this will also be checked. During the study we cannot avoid another two main significant factors such as technology and student readiness; Whereas, technology refers to the delivery of

online classes up-to the mark; while on the other hand, student readiness refers to how they(students) can easily avail/access the online classes by technology and how they cope up if any obstacles come across. Background It is no secret that alike the entire world, Pakistan was also taken aback with the sudden outbreak of COVID-19. The problem is Corona Virus Disease – 2019 (COVID -19) which basically relates to the medical and health sciences, and researcher are in the domain of social sciences of education sector. However, this corona virus epidemic has affected all including our education industry, primarily. We had never ever seen such a pandemic in form of the novel coronavirus (2019) in our life at all, which has truly affected education fraternity of Pakistan, and the world. There is no exact solution found as yet against this covid-19, but the quarantine and/or isolation with precautionary measures as advised by Government and/or health advisors is the only way prescribed by experts for lowering the curve of spread. Therefore, there are so many new questions which arose with respect to the education industry and challenges to cope up with this situation till the solution in form of some sort f remedy is available. The study focus is on education industry, primarily higher education institutions (HEI) and/or universities. This research study can be applied as well as action research which will definitely give solutions up-to the mark and standards of HEC Pakistan. Furthermore, which can be applied in other developing countries, and full or partial in developed countries during such outbreaks if any happen.

Effective course of actions with respect to the study objectives would be suggested and recommended as per opinions and responses obtained from respondents of education industry. Indeed we are in developing countries, the study will contribute by providing the solution(s) against the problems and which will play role in socio-economic sectors of country. The results would be in the shape of strategies models and process to be followed by HEI/Universities to face the challenges such as COVID-19 or any other related. The truth with current trend and present views and concerns of HEC are that our universities are lacking behind the online or e- learning process as compare to other countries during COVID-19 pandemic. However, by conducting this study we will be in the position give and establish our system as per the readiness of institutions and up-to the standard to provide quality education in our HEI/universities; not only this but we can sell our findings / services to other needed countries. Supporting documents (Sindh and federal government such as HEC/ media talks of chairman/dawn news etc)

METHODOLOGY

Obviously systems including education is not ready in term of alternatives that had to be taken up during remedial measures like lockdown declared as a result there is a big paradigm of education in Quarantine therefore immense need of on line education system or e-learning models in this challenging situation eventual assistance of the learners generally and specifically at higher education level . This is the greatest compulsion for higher education institutions to consider and facilitate their students since readiness of higher education institutions (HEIs) regarding alternatives is a key of success so the primary objective of this research study will be explore the alternatives Delivery Channels of Education and the readiness of Pakistani HEIs in the face of a pandemic

The primary aim of the study was to explore the alternative delivery channels and the readiness of the higher education system regarding e-learning/online teaching and learning processes. This research was descriptive in nature as it explored various variables related to the main theme. The study employed both qualitative and quantitative methods.

The population comprised all higher education institutions in Pakistan. The sample included all types of faculty, technical staff, and students from higher education institutions/universities in Pakistan. A total of 60% of higher education institutions/universities were selected through convenient random sampling. An open- and close-ended questionnaire with a scale was used as the primary research tool. The survey questionnaire was developed (attached) and focused on key themes related to the objectives, including institutions, faculty (including technical staff), students, and libraries. The data collection instrument for this study consists of a structured questionnaire divided into two main parts, each targeting different respondent groups within the university. Part 1 is designed for relevant teaching and technical staff, including members of the E-Program Committee, Office of Research, Innovation & Commercialization (ORIC), and Quality Enhancement Cells (QECs). This part comprises two sections, with each section containing 10 closed-ended and 10 open-ended questions, allowing for a balanced mix of quantitative and qualitative responses. Similarly, Part 2 is intended for students from various programs and faculties within the university. This section consists of 15 closed-ended and 15 open-ended questions, enabling a comprehensive assessment of student perspectives. The combination of structured and open-ended questions ensures that the study captures both measurable trends and in-depth insights, facilitating a thorough analysis of the views and experiences of faculty and students.

Data was collected from faculty and students of HEIs. After discussions and piloting, the research tools were finalized. The main data was gathered through the survey questionnaire, which consisted of two parts: Part One and Part Two. Each part contained sections, and within each section, various items were designed with close-ended measuring attributes. Consequently, the quantitative data was analyzed statistically in percentages using SPSS, while open-ended responses were analyzed by identifying common themes. Data was interpreted according to the main areas of the study. The study revealed key findings and recommendations.

RESULTS & DATA ANALYSIS

QNo. 2 Does your university have high speed internet facilities to support E-teaching / E-learning?

23 responses
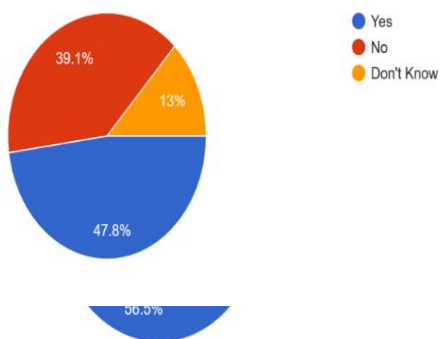
If Yes which system does your Campus have?
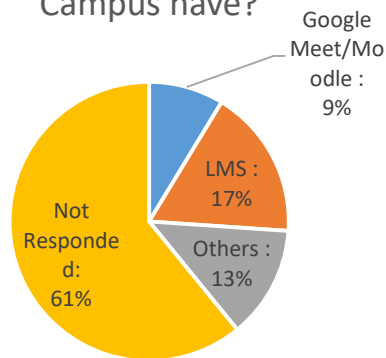
If Yes which type of internet facility is there?
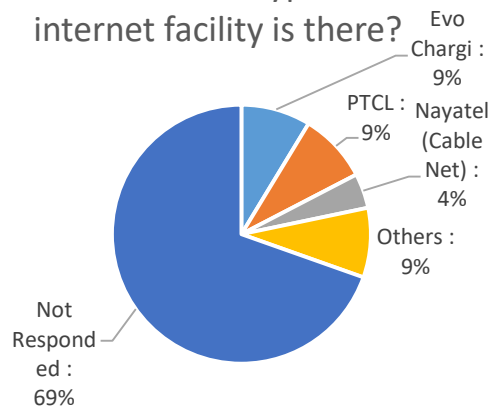
QNo. 3 Does your unive[...] all faculties?

23 responses

If Yes which LMS does the University use?
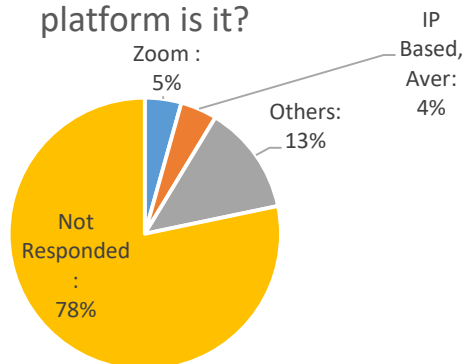
QNo.4 Does your univer[...] hardware?

23 responses

If Yes which Video Conference platform is it?

QNo.5 Does your university have digitized learning material available for all faculties and courses?
23 responses
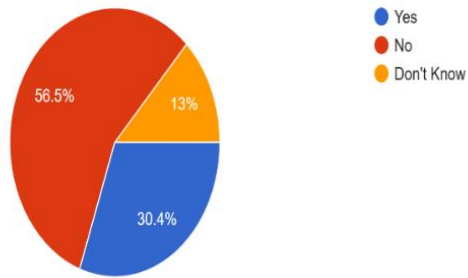
If Yes which format(s) is it available in?
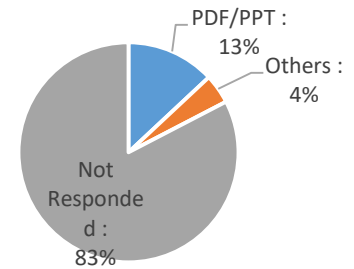
QNo. 6 Does your university have digitized library resources and access for all students?
23 responses
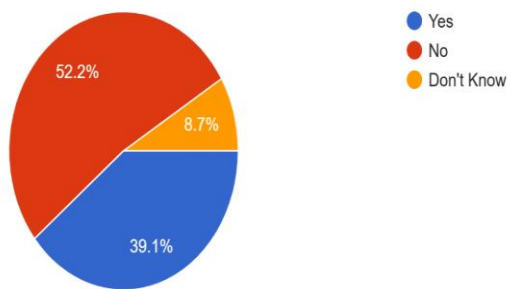
If Yes which popular journals are accessible?
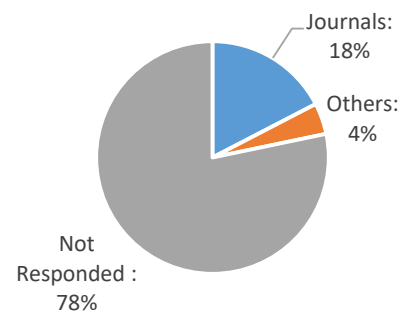
QNo.7 Does your university have a dedicated radio frequency / channel?
23 responses
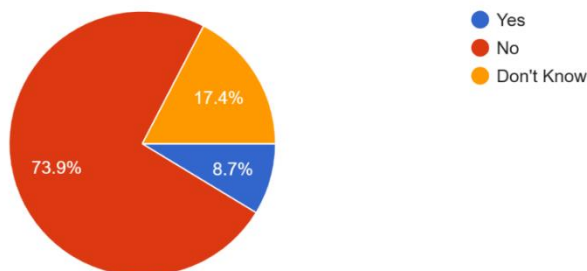
If Yes which frequency / Web channel is it?
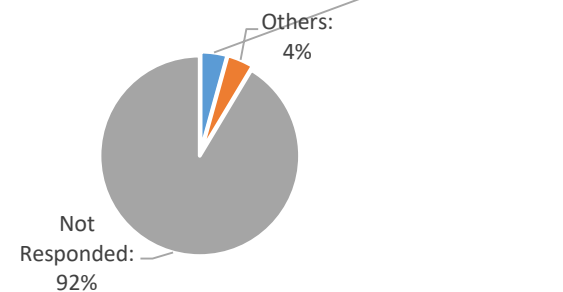
QNo.8 Does your university have a dedicated TV / Satelite Channel frequency for broadcasting?

23 responses
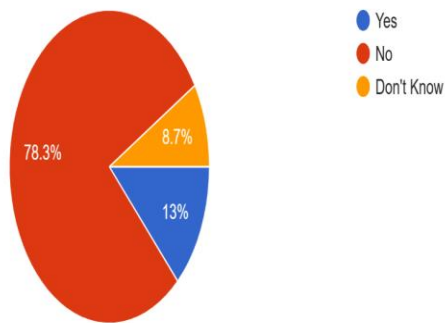
- Yes
- No
- Don't Know

78.3%
8.7%
13%

If Yes which frequency / Web channel is it?

Web TV: 4%
Others: 9%
Not Responded: 87%
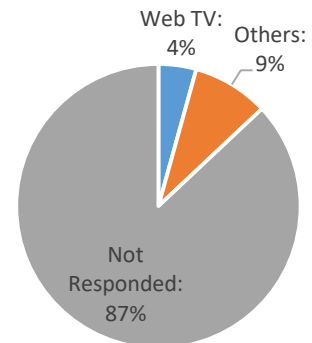
QNo.9 Does your university have presence on Social Media (Like Facebook, Youtube etc.)?

23 responses

- Yes
- No
- Don't Know

30.4%
13%
56.5%

If Yes what are the URLs / Page addresses?

LMS: 4% Facebook: 9%
Others: 22%
Not Responded: 65%
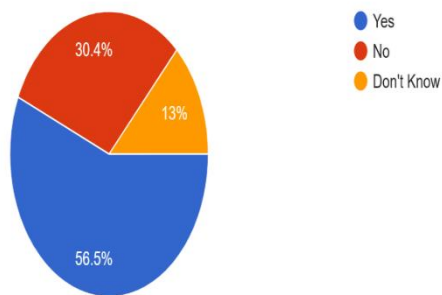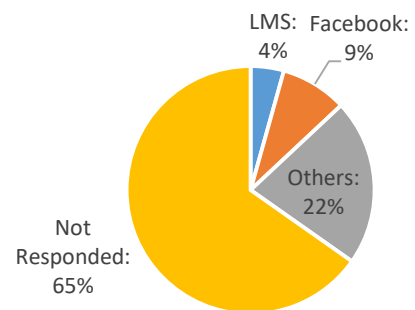
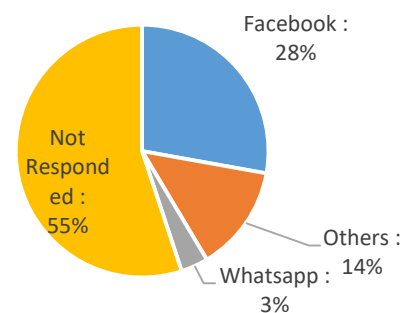QNo.10 Does your university have any Policy / SOPs / Governance Framework for E-Teaching / E-Learning strategies?

23 responses

- Yes
- No
- Don't Know

If Yes Is it approved & based on any standard?

As per HEC: 9%

Others: 9%

Not Responded: 82%
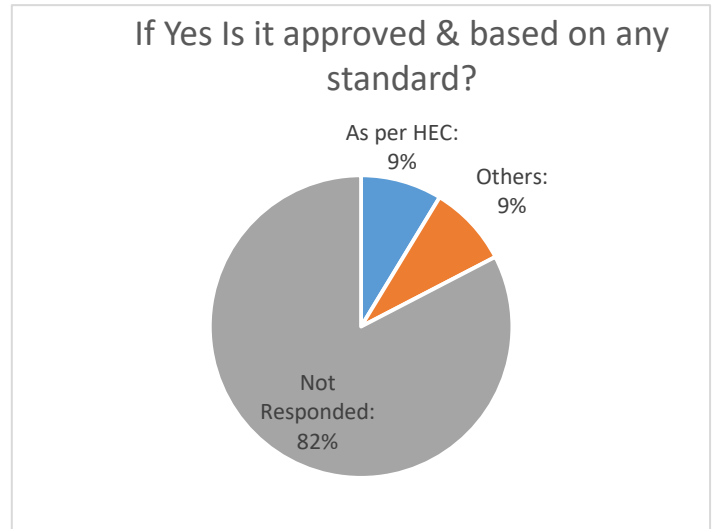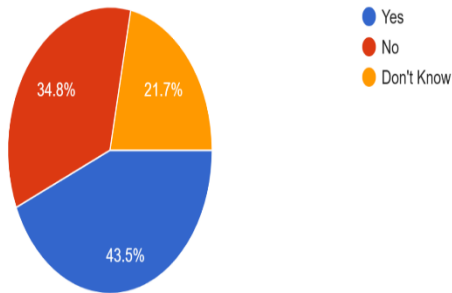
PART 2: This part of the questionnaire is to be filled-in by students of different programs & faculties of University.

QNo.1 Do you have a capable / high end device (computer, laptop, smart phone etc.) to adopt/use E-Learning?

512 responses

- Yes
- No
- Don't Know

82%

16.4%

3358

If YES, Which type of internet do you use?

Not Responded: 34%

PTCL WiFi : 22%

Fibre Optics (Cable Internet) : 4%

Mobile Data: 38%

Others : 2%
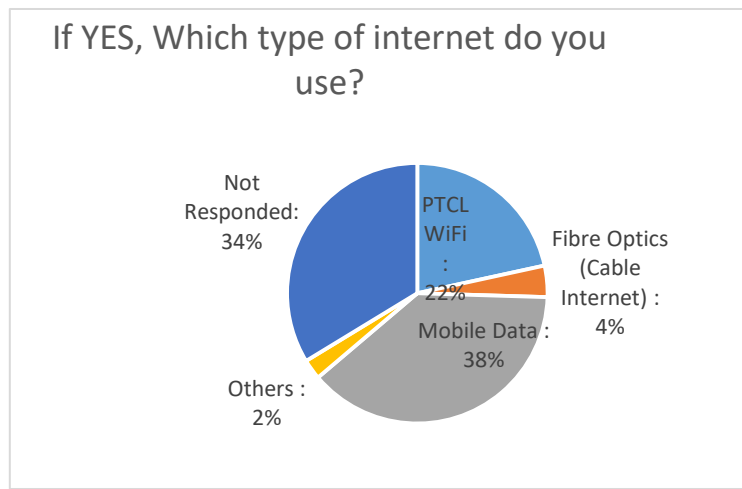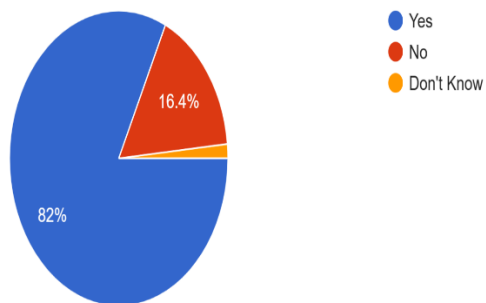
QNo.3 Do you have proper orientation to your University's Learning Management System?
512 responses

- Yes
- No
- Don't Know
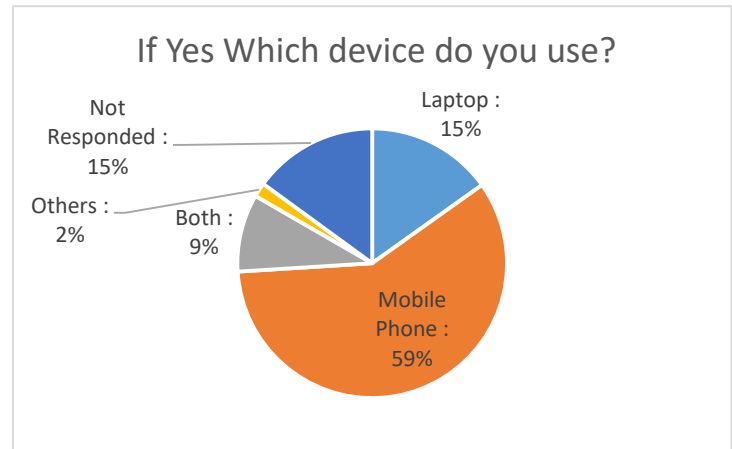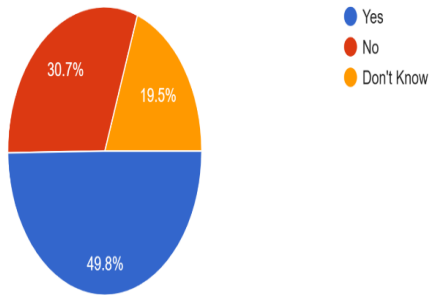
QNo.2 Do you have high-speed internet facility to enable data sharing / streaming on-line?
512 responses

- Yes
- No
- Don't Know

If Yes Which device do you use?

Not Responded : 15%
Others : 2%
Both : 9%
Laptop : 15%
Mobile Phone : 59%

If YES, Which LMS do you use?

MS Teams : 9%
LMS : 3%
Whatsapp/Zoom/Meet : 14%
Others : 11%
Not Responded : 63%
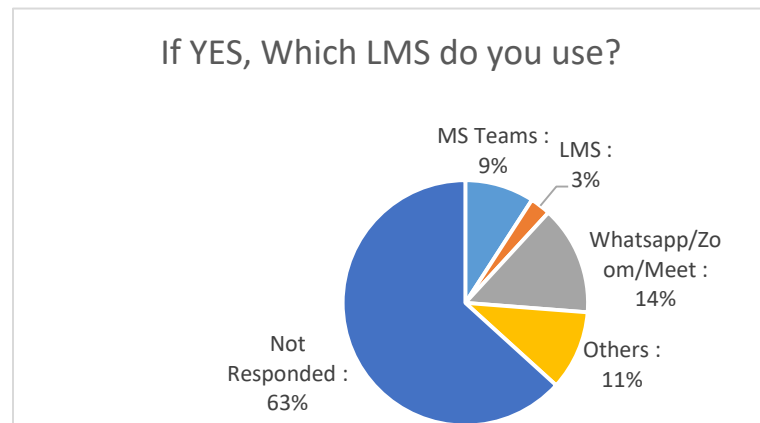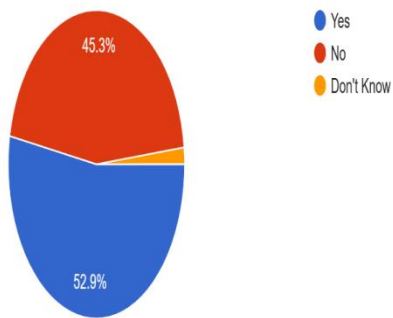
QNo.4 Do you use Video Conferencing for taking lectures?
512 responses
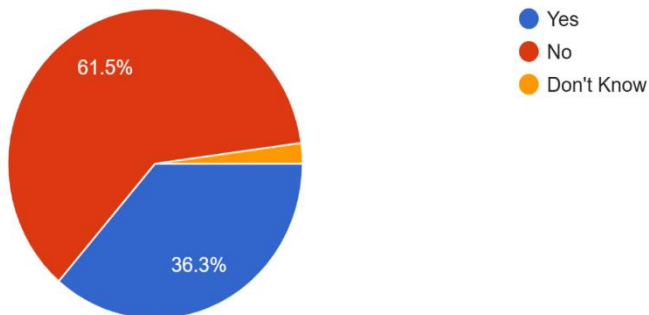
If Yes which Video Conference platform is it?
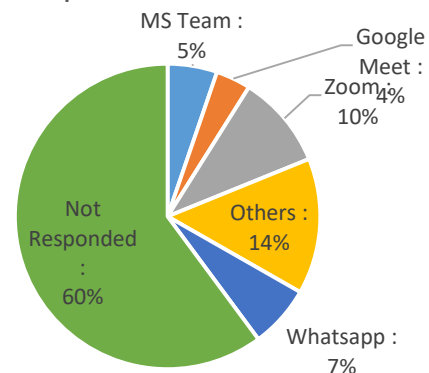
QNo.5 Do you have access to digitized learning material for E-Learning / lectures / course material?
512 responses
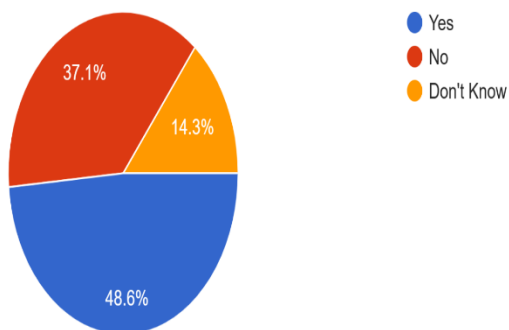
If Yes which format(s) is it available in?
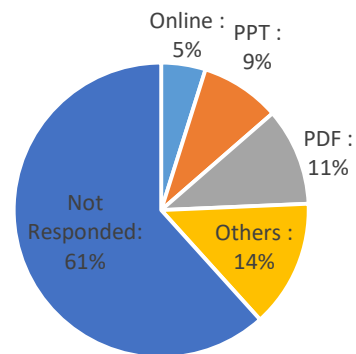
QNo.6 Do you have access to University's library resources?
512 responses
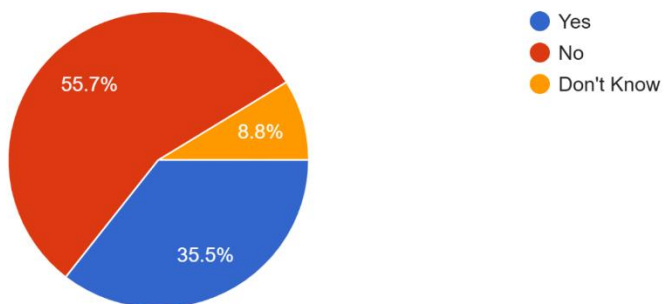
If Yes which popular journals do you use?
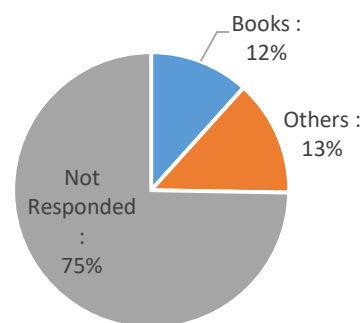
QNo.7 Do you prefer to take lectures on Radio if your University provides this facility (if not provided already)?

512 responses
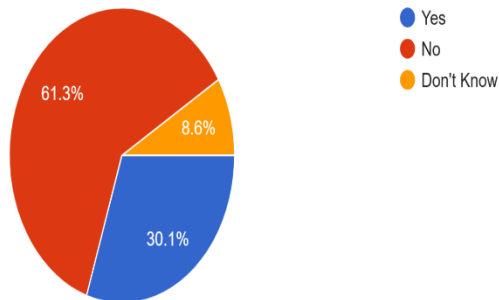
If Yes how much time would you give?
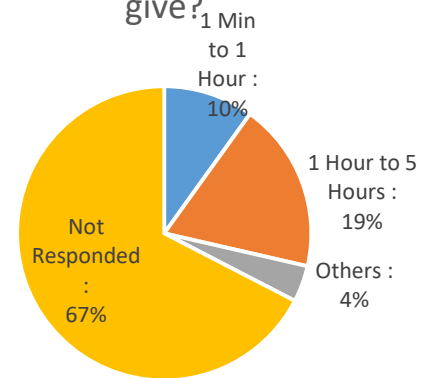
QNo.8 Does your university have a dedicated TV / Satelite Channel frequency for broadcasting?

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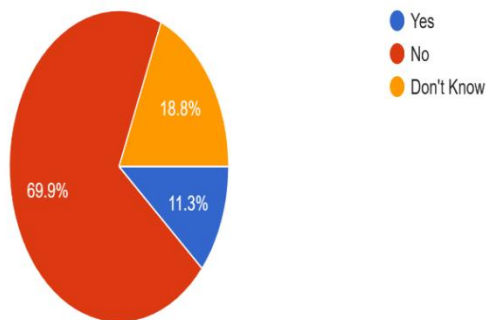
If Yes how much time would you give?
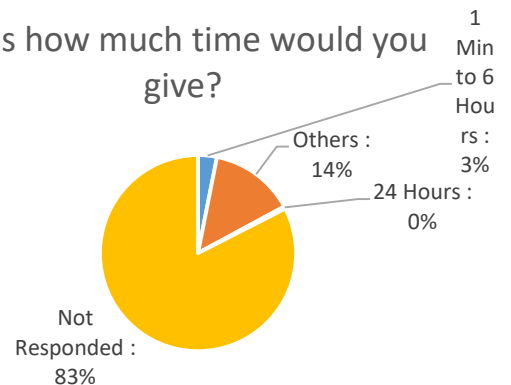
QNo.9 Does your university have presence on Social Media (Like Facebook, Youtube etc.)?

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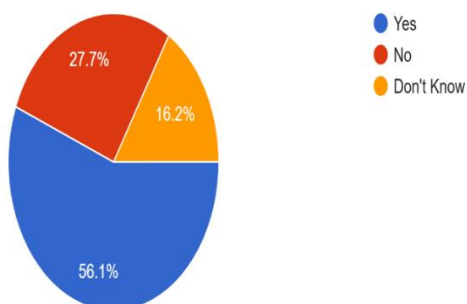
If Yes would you prefer sessions on social media?

QNo.10 Does your university have any Policy / SOPs for E-Teaching / E-Learning (for LMS or any other platform)?

512 responses

- Yes
- No
- Don't Know

If Yes are you satisfied with the SOPs / Policy?
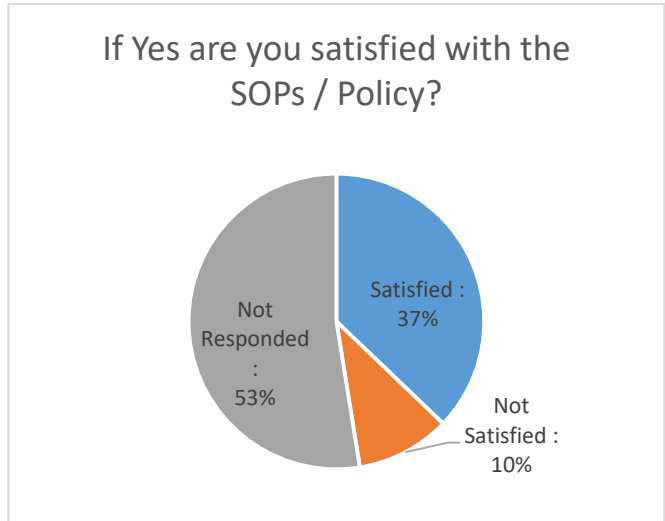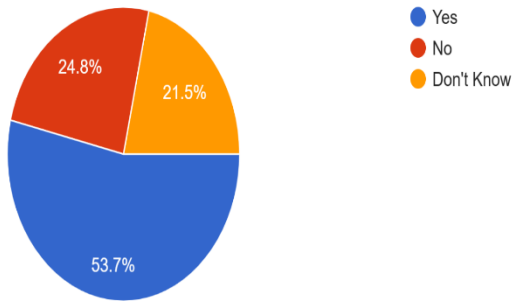
QNo.11 Would you prefer a mix of live classes and pre-recorded sessions?

512 responses

- Yes
- No
- Don't Know

If Yes how much time(hrs) can you give in a week?

If Yes which mode would you prefer the most?
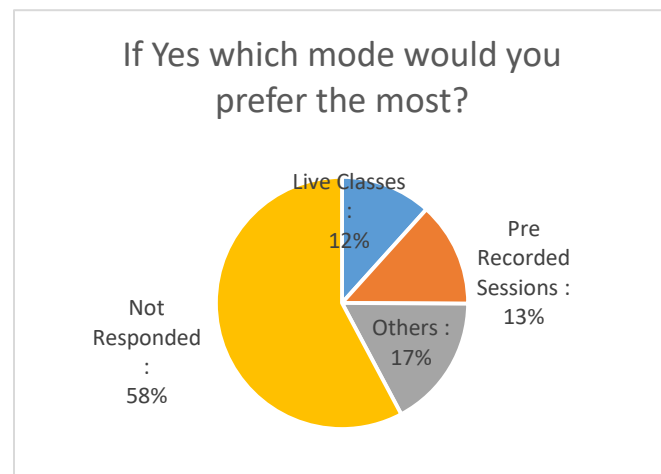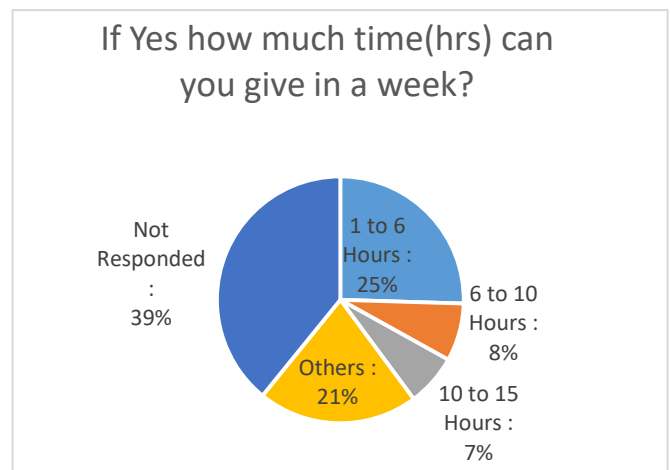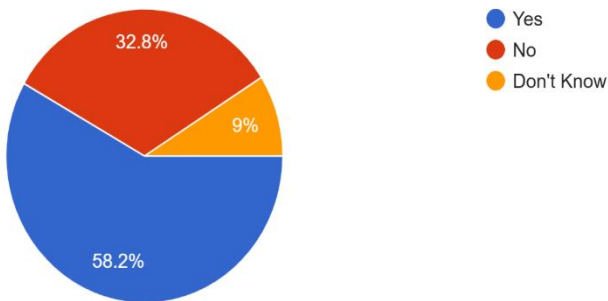
QNo.12 Would you be willing to give dedicated time to online sessions?
512 responses
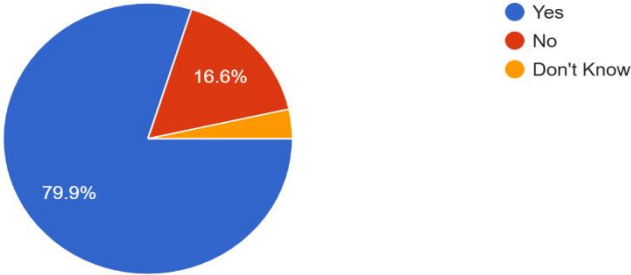
QNo.13 Would you prefer an online assessment system?
512 responses
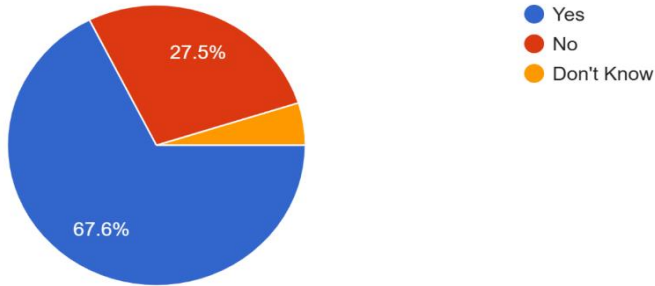
If Yes what type would you prefer? (MCQs, Assignments)
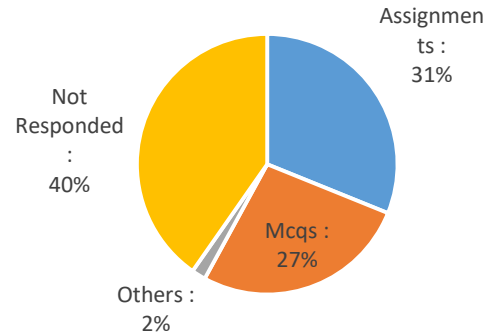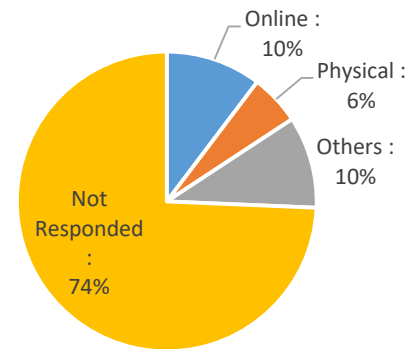

QNo.14 Would you want your University to offer a dedicated distance / on-line education program after COVID-19?
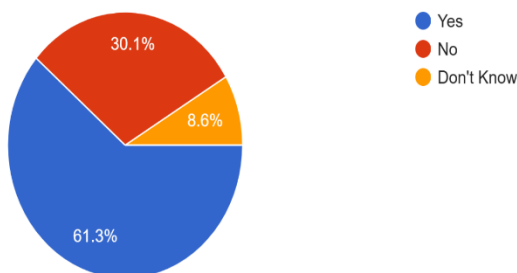512 responses
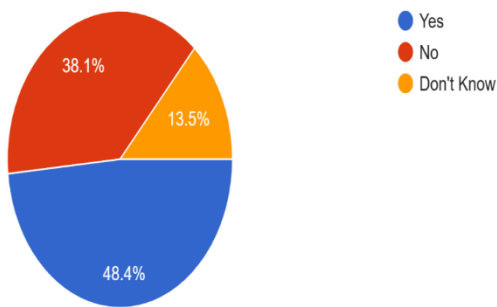
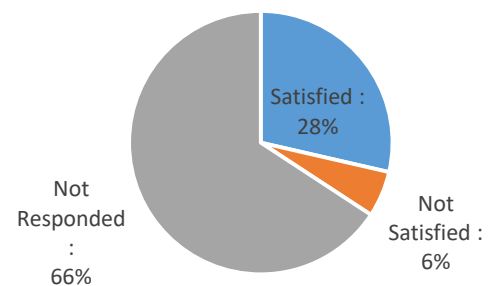If Yes what type of a program would you prefer?

QNo.15 Are you satisfied with the steps taken by your University for Alternate / E-Teaching / E-Learning in COVID-19?
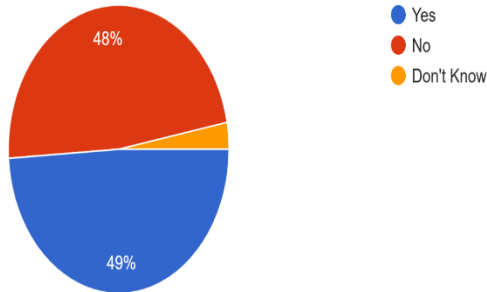512 responses

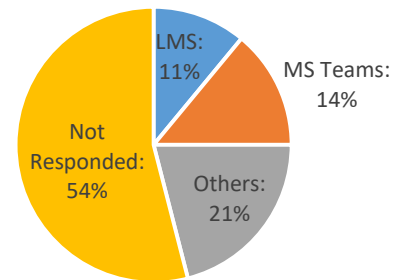If Yes please share your suggestions & comments.

Section .2 Readiness of the teacher's / faculty members to E-teaching / E-learning (this section of Questionnaire is filled by HODs/Faculty members) of HEIs university

QNo.1 Has your university arranged any equipment or facility for you to adopt E-Teaching / E-Learning strategies?
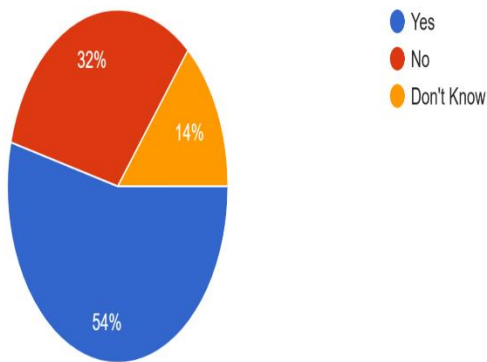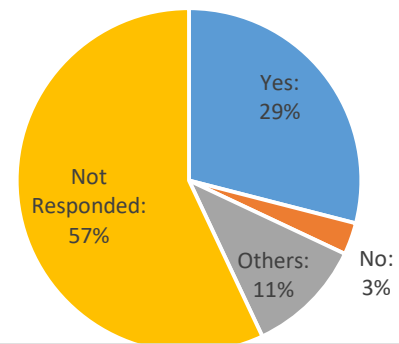100 responses

QNo.2 Has your university established a body for governance of E-Teaching / E-Learning?
100 responses

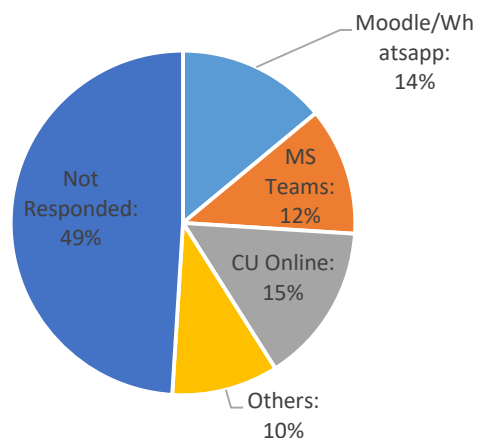QNo.3 Has your university developed any E-Teaching / E-Learning Policy?
100 responses

If YES, What equipment have you been provided?

If Yes has the governance body been notified?
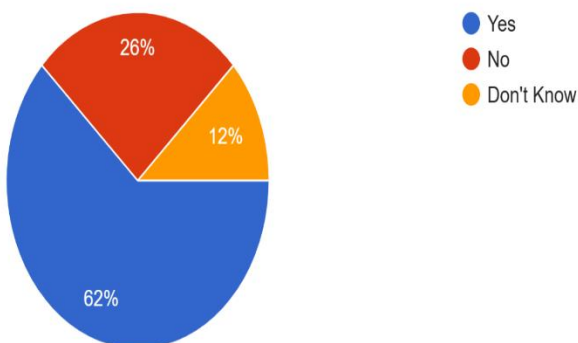
If Yes which LMS does the University use?

QNo.4 Has your university given you access to any Learning Management System for E-Teaching?

100 responses
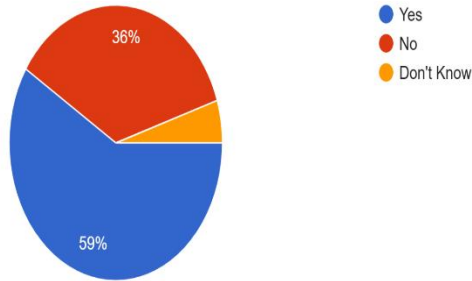
If Yes are you satisfied with its quality & features?
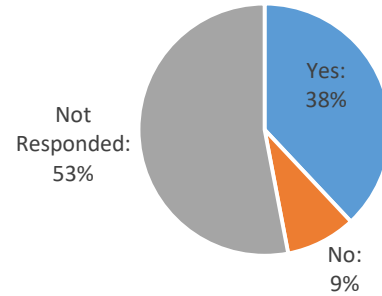
QNo.5 Have you or your university developed E-Learning Content / Digital Resources for E-Teaching?

100 responses
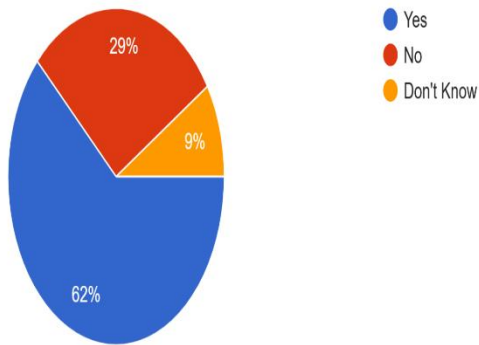
If Yes which format(s) is it available in?

QNo.6 Has your university provided you any formal training or orientation sufficient to use E-Learning platform?

100 responses

If Yes what type of training was it?
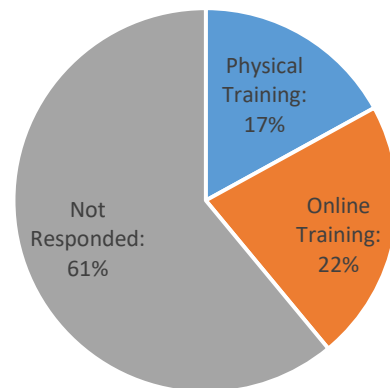
QNo.7 Do you have access to sufficient online / library resources for developing lectures / content?

100 responses

- Yes
- No
- Don't Know
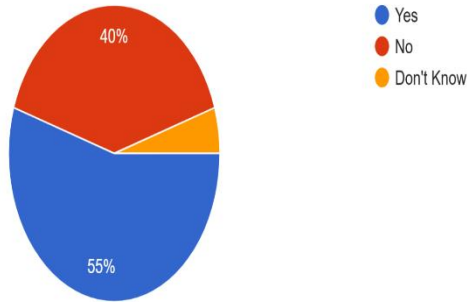
If Yes which popular journals do you have access to?

IEEE/Elsevier Journal: 12%

Others: 22%

Not Responded: 66%
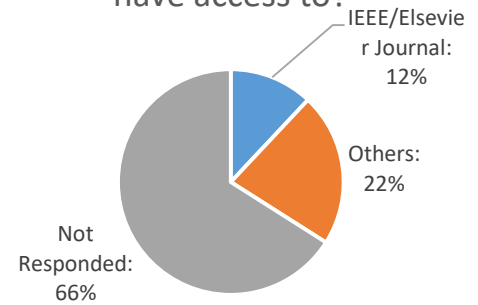
QNo.8 Do you use your university's dedicated Radio / TV Channel frequency for broadcasted E-Teaching purpose?
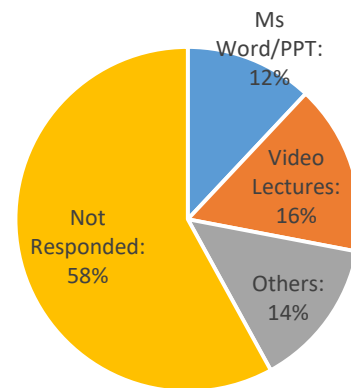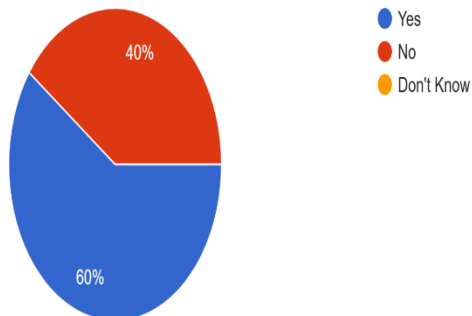
100 responses

- Yes
- No
- Don't Know

If Yes which frequency / Web channel is it?

University Wifi: 6%

Don't Exist: 1%

Not Responded: 93%
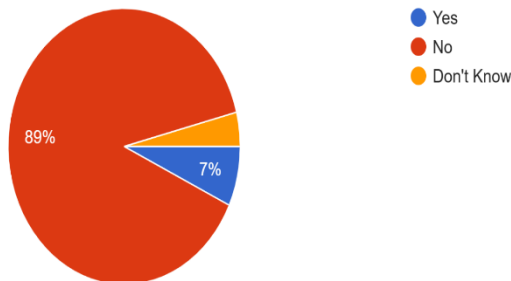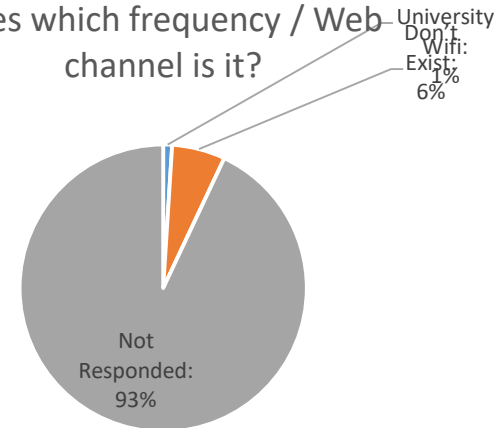
QNo.9 Do you use your university's Social Media (Like Facebook, Youtube etc.) for E-Teaching purpose?

100 responses

- Yes
- No
- Don't Know

If Yes what are the URLs / Page addresses?

Facebook: 5%

University Web Page 6%

Others: 4%

Not Responded: 85%
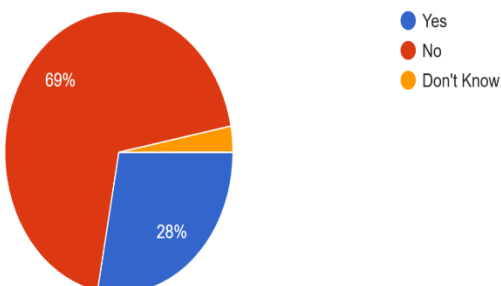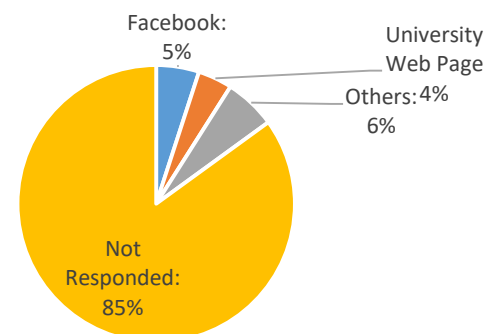
QNo.10 Does your university have any SOPs or Manuals for E-Teaching / E-Learning (using LMS or any other platform)?

100 responses

● Yes
● No
● Don't Know

If Yes are you satisfied with the SOPs / Policy & QA?
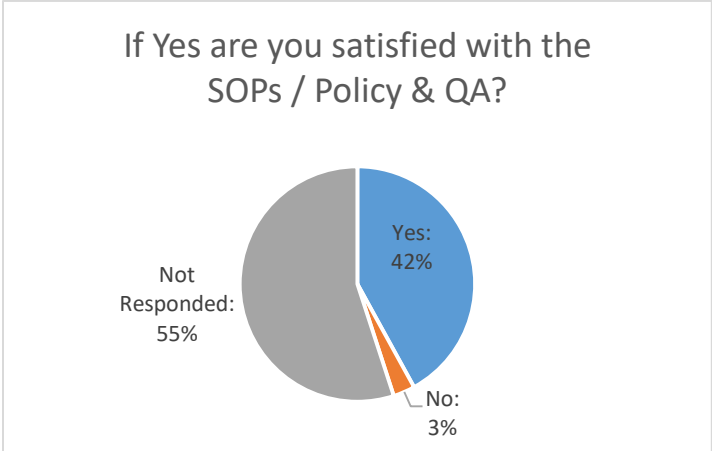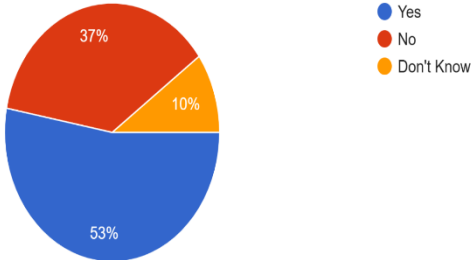
Findings & Discussions

The study aimed to evaluate the alternate delivery channels & readiness of Pakistani Higher Education Institutions (HEIs) in adopting alternative delivery channels for education during the COVID-19 pandemic. The analysis of the collected data, including responses from faculty members, students, and institutional stakeholders, reveals several key findings regarding institutional preparedness, faculty and student adaptability, technological infrastructure, and overall e-learning effectiveness.

The results indicate that while 75% of universities acknowledged the urgency of transitioning to online education, their preparedness varied significantly. Only 40% of HEIs had well-established Learning Management Systems (LMS) and digital libraries in place before the pandemic. The majority (60%) faced challenges in implementing an efficient online education system due to inadequate technological infrastructure, lack of faculty training, and minimal prior investment in e-learning tools.

A critical finding is the disparity in faculty preparedness for online teaching. While 55% of faculty members adapted quickly to virtual platforms, 45% struggled with the transition due to a lack of digital teaching experience. The study highlights that only 35% of faculty had prior experience in online teaching, emphasizing the need for extensive professional development programs focused on pedagogical strategies for effective online instruction. Universities with prior exposure to blended learning models showed relatively better faculty readiness and course delivery efficiency.

Student responses indicate a significant variation in their ability to engage with online learning. Approximately 70% of students reported difficulties related to internet connectivity, access to digital devices, and unfamiliarity with online learning environments. However, 65% of students stated that they had access to their own computers or laptops, while the remaining 35% relied on shared or borrowed devices. Many students (60%) faced challenges in maintaining concentration during virtual lectures and expressed concerns about the quality of online assessments and feedback mechanisms. The digital divide remains a major barrier to inclusive and effective e-learning.

The study also examined the availability and effectiveness of technological resources in HEIs. A large number of universities (62%) lacked the necessary IT infrastructure to support large-scale online education. The absence of standardized LMS platforms across institutions resulted in inconsistent e-learning experiences. Additionally, only 45% of students reported having adequate access to digital course materials and online library resources, affecting their ability to access required academic content.

The findings emphasize the need for robust quality assurance mechanisms in online education. Many institutions (58%) lacked clear policies on content delivery, assessment methodologies, and student engagement strategies. Moving forward, HEIs must establish comprehensive frameworks for digital education, including standardized LMS adoption, faculty training programs, and student support

services. Furthermore, collaboration with regulatory bodies such as the Higher Education Commission (HEC) is crucial to ensuring sustainability and consistency in e-learning initiatives.

RECOMMENDATIONS CONCLUSION

Recommendations

- To improve interactive sessions like presentations, quizzes, and discussions.
- Enhance accessibility with mobile-usage design.
- Implement AI-driven learning paths.
- Ensure valid and valuable tech support facilities.
- Updated content with alignment to industry standards.
- Using video conferencing for real-time discussion and interaction.
- Usage of pre-recorded lectures and discussions.
- Involvement of students in studying content online before live sessions.
- Encourage blended learning.
- Policy Development: The government and HEC should establish clear guidelines and policies for effective online education implementation.
- Capacity Building: Higher education institutions should enhance faculty and staff training on e-learning tools and online teaching methodologies.
- Complete learning Management System LMS for HEIs as per the need of courses especially practical oriented courses with embedded simulations where required along with prescribed use of VR equipment for hands-on 3D practice
- Curriculum, Content, and delivery need to be designed specifically for online learning
- Strong internet connectivity packages on subsidized rates for students with laptop schemes
- Professional development of faculty on e-learning.

Conclusion

The truth with current trend and present views and concerns of HEC are that our universities are lacking behind the online or e-learning process as compare to other countries during COVID-19 pandemic. However, by conducting this study we are in the position give and establish our system as per the readiness of institutions and up-to the standard to provide quality education in our HEI/universities; not only this but we can sell our findings / services to other needed countries.

The study concludes that while Pakistani HEIs made commendable efforts to transition to online education during the pandemic, significant gaps remain in institutional readiness, faculty preparedness, student accessibility, and technological infrastructure. Addressing these challenges requires a multi-faceted approach, including increased investment in digital infrastructure, enhanced faculty development programs, and strategic policies to bridge the digital divide. The findings

underscore the urgent need for HEIs to adopt long-term e-learning strategies to ensure effective teaching and learning process.

LIMITATIONS

This study has certain limitations that should be considered. The research focuses on Pakistani HEIs, with data collected from a sample representing 60% of institutions, which may not fully capture nationwide variability. the sample of the each university was different due to total number and also heterogeneous, and the data collected within the limited time then was analyzed. There were also individual difficulties based on the area. The next researcher can take this study further from this stage. Majority data collected online that may effect. Online data collection has limitations so may be leading to sampling bias. There is also a risk of inaccurate responses due to the lack of physical interaction. Additionally, technical issues and low response rates can affect data completeness. Future research should expand to a larger sample size and include longitudinal data to assess the long-term impact of alternative education delivery channels.

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