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Online Education Using E-Learning Tools – A Survey

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Abstract: Online learning and massive open online courses (MOOC) are some of the platforms that have significant contribution for many students in online teaching/learning. These tools are capable of transforming higher/technical education in the form of Open access. Despite the fact that MOOC have attracted a huge number of learners, concerns still exist related to issues of quality or attributes of learning/ teaching strategy.

In this article the practical conclusions from various active teachers have been collected. Also this article helps to apply the various strategies effectively to enhance faculty success in their transformations of classical teaching platforms to online learning and teaching. Finally, the authors have given their remarks about MOOC.

IndexTerms **- Learning online, MOOCs, higher education, technical education, quality teaching**

I. INTRODUCTION

Till now, a large number of institutes have been found to engage the students in traditional one to one type of education. Recently, the world has seen a paradigm shift in teaching/ learning method. The need that encouraged online education is, to maintain a competitive environment and to conduct the classes in more accessible fashion for an increased number of students with multiform interest. Also online teaching delivers innovative, inspiring prospects to explore the learning atmosphere for students with diversified interest. A study conducted in one of the American universities for undergraduate student who had registered for both classical/traditional and online courses, revealed that their performance lies in online courses rather than traditional classroom. It is because they feel that they have learnt more in online classes, spent ample time and acquired quality education compared to traditional classes [1].

In online mode of flexible learning, students are facilitated with various options that make students to be more responsible towards their own learning. Some of the strategies/platforms are discussed below, that are accountable for increased and ensured higher level of students involvement in online teaching/learning process. In a broad way, online course programs provide a learner to have access to digital classes. These virtual courses resemble to traditional way of teaching in many ways, such as: an instructor delivers his/her educational experience through video, image, text, audio, and PDF files. The instructor prefers a platform to be used in such a way that, it enables students to note down notes, perform exercises and accomplish the exams to test their knowledge.

In a study, the authors [2] assessed whether online teaching delivery produces comparable student test performance, as the offline one-to-one approach, irrespective of academic susceptibility. The study performed associated an apparent-experimental comparison of student performance in an undergraduate health science statistics course classified in two ways. The first class included one group of students which was taught with a classical one-to-one contact in a classroom and the other through an online instructional approach fully. The conclusion of this study performed showed that, online teaching had an effective impact on the performance of an average and a good student compared to poor students. A mechanized/virtual classroom involves performance of different activities employed in online session. In these sessions, the participants are allowed to communicate with each other, monitor other's presentations or videos, converse with remaining participants and even can suggest the possible improvements to be included.

II. TOOLS USED IN ONLINE LEARNING

In the rapidly evolving landscape of education, technological advancements have catalyzed a paradigm shift, making online learning an integral component of the educational ecosystem. As traditional classrooms expand into virtual domains, educators and learners are leveraging an array of tools that facilitate interactive and engaging online learning experiences. These tools, ranging from learning management systems (LMS) to multimedia resources and communication platforms, play a pivotal role in transforming how knowledge is disseminated and acquired. This article delves into the diverse toolkit of online learning, highlighting the multifaceted technologies that enrich pedagogy and nurture collaborative learning environments.

Learning Management Systems (LMS): At the heart of online education lies the Learning Management System, a digital hub that serves as a centralized platform for course delivery, resource sharing, assignments, and assessments. Widely used LMS such as Moodle, Canvas, and Blackboard provide educators with the means to structure their courses, upload learning materials, create quizzes, and track student progress. LMS streamline administrative tasks, enhance communication between instructors and students, and offer a structured framework for the online learning journey.

Video Conferencing and Webinar Tools: Video conferencing platforms like Zoom, Microsoft Teams, and Google Meet have transcended their corporate origins to become indispensable tools for online education. These platforms enable synchronous interactions by facilitating real-time video and audio communication among instructors and students. Webinar-specific tools offer features tailored to larger audiences, making them apt for virtual lectures, panel discussions, and guest speaker sessions. Video conferencing tools foster engagement through live discussions, Q&A sessions, and screen sharing capabilities, making them essential for maintaining a sense of community in the virtual classroom.

Content Creation and Sharing: Instructors harness various content creation tools to design visually appealing and interactive learning materials. Tools like Articulate Rise and Adobe Captivate empower educators to craft multimedia-rich e-learning modules, including interactive quizzes, videos, animations, and simulations. Additionally, cloud-based storage and sharing platforms such as Google Drive and Dropbox facilitate seamless distribution of resources, ensuring students can access course materials anytime, anywhere.

Collaboration Tools: Online learning promotes collaborative learning experiences through a range of tools. Discussion forums, often integrated within LMS, encourage asynchronous dialogues among students. Tools like Padlet and Flipgrid facilitate dynamic visual collaborations, enabling learners to contribute thoughts, videos, and multimedia content in response to prompts. Collaborative document editors like Google Docs promote real-time group work, allowing students to collectively contribute and review assignments, fostering teamwork and peer interaction.

Interactive Assessments and Quizzes: Online assessments have evolved beyond traditional quizzes, embracing gamification and interactivity. Tools such as Kahoot! and Quizlet gamify learning through interactive quizzes and flashcards, fostering engagement and competition among students. Additionally, platforms like Poll Everywhere and Mentimeter enable instructors to create real-time polls, surveys, and quizzes that students can participate in using their devices during live sessions.

Virtual Reality (VR) and Augmented Reality (AR): Emerging technologies like virtual reality (VR) and augmented reality (AR) have begun to revolutionize online learning. VR immerses learners in virtual environments, making complex concepts more tangible. Platforms like Engage and ClassVR enable educators to create immersive experiences, from virtual field trips to anatomy simulations. AR overlays digital information onto real-world environments, enhancing engagement and understanding. Apps like Aurasma and Metaverse allow educators to create interactive AR experiences that merge physical and digital worlds.

Peer Review and Feedback Tools: Constructive feedback is crucial for refining student work. Peer review tools, such as Peergrade and Turnitin's Feedback Studio, facilitate anonymous and structured assessment of assignments among peers. These tools promote critical thinking and communication skills as students provide and receive feedback on their work, enhancing the learning experience and encouraging reflective practice.

Adaptive Learning Platforms: Adaptive learning platforms use algorithms to personalize the learning journey based on individual student performance. Tools like Knewton and Smart Sparrow assess students' strengths and weaknesses, adapting content and assignments to suit their needs. This approach fosters personalized learning experiences, addressing diverse learning paces and styles.

Social Media and Communication Platforms: The integration of social media and communication platforms, like discussion boards, chat rooms, and social networking sites, provides avenues for informal learning and peer interaction. Educators can leverage platforms like Twitter, Reddit, or Slack to facilitate discussions, share resources, and build online learning communities outside the confines of the LMS.

Analytics and Data-driven Insights: Data analytics tools embedded within LMS or external platforms allow educators to track student engagement, performance, and progress. Insights derived from data help instructors identify struggling students, gauge the effectiveness of teaching strategies, and adapt their approach accordingly. Tools like Learning Analytics and Tableau enable educators to make informed decisions to enhance the learning experience.

One of the more recent virtual classrooms is Google Classroom [3]. This was introduced by Google as a new function in Google Apps for Education in May 2014. The study also demonstrates how well Google Classrooms work for teaching. Zoom is a new virtual classroom that has been introduced. A case study of a courseware experience using Zoom to create live online virtual classrooms was provided by the author in a study [4]. Another collaboration tool is Microsoft Teams, a cloud-based application that gives Microsoft 365 access to channels, discussions, meetings, files, and apps. [5][6]

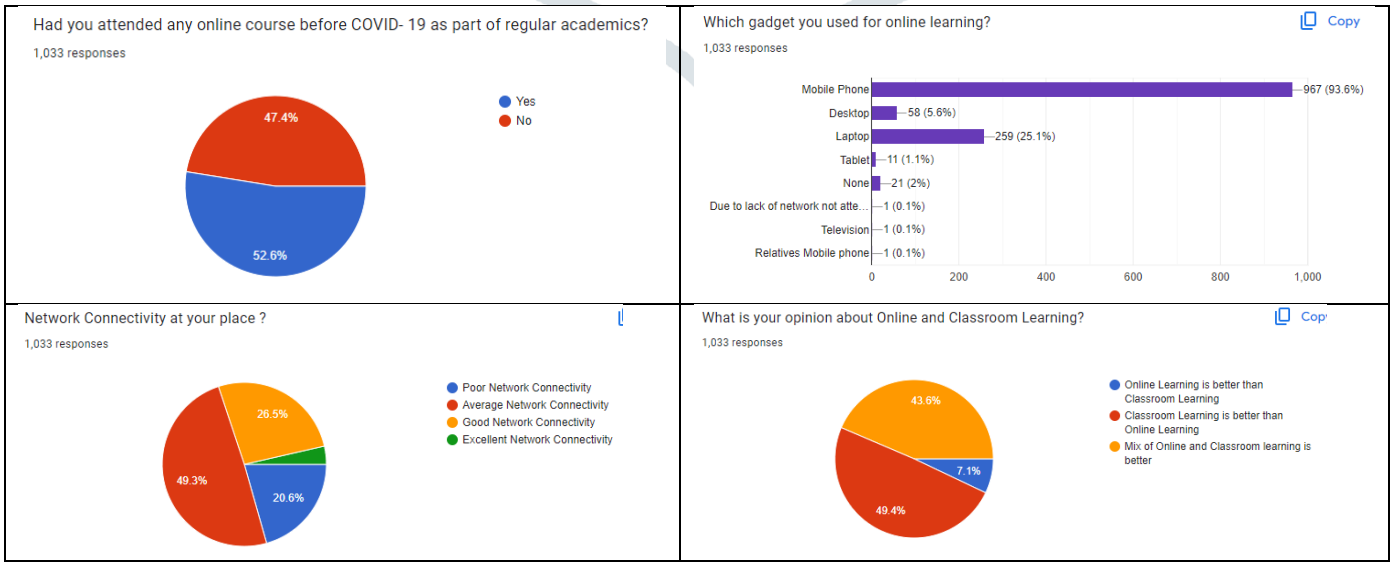
You may build effective, adaptable, and interesting tools for online learning experiences using Moodle, a free learning management system. The author of the study made contributions to the creation of Moodle, a well-known open-source course administration system (moodle.org) [7]. [8]. One of the most well-known websites for sharing videos online is YouTube. The author of a study demonstrates YouTube's value for learning and teaching [9].

A promising option for group learning is the online word processing programme Google Docs. Students can contribute both synchronously and asynchronously to a single topic. The professor can evaluate the student and keep track of his engagement [10]. Massive Open online courses (MOOCs) are a well-researched innovation in distant learning and an efficient and well-liked way of learning. These methods provide a very adaptable and unrestricted way to study new things at your own speed. There are several different types of MOOC platforms, including Khan Academy, Edx, Coursera, Udemy, and Udacity. They offer more than 1000 courses from over 100 universities. The student must enrol, participate in educational lectures, finish assigned tasks, and pass exams.

The advantages of MOOCs are numerous. Students can make themselves academically prepared for college by taking a handful of these courses. These are available to any nation worldwide, encouraging global peer learning. Since there are no prerequisites, anyone can enrol in any course. MOOCs are accessible to those who are hard of hearing or deaf in a variety of languages with subtitles. By completing the courses that bridge the gap between a college graduate and an employee, MOOCs can assist students in improving their soft skills, such as teamwork and public speaking.

III. STUDENT SURVEY ON ONLINE EDUCATION

In the rapidly evolving landscape of education, online learning has emerged as a pivotal alternative to traditional classroom settings. This research article delves into the realm of online education by presenting an in-depth analysis of responses collected from a diverse cohort of students. The study garnered insights from a substantial participant pool, with a total of 1033 students engaging in a comprehensive survey tailored to assess their perceptions and experiences with online learning modalities. The collected data offers a comprehensive understanding of the strengths and limitations of online education, shedding light on various aspects such as accessibility, engagement, technological challenges, and overall satisfaction. The participation of 1033 students in the survey underpins the significance of the findings, as it reflects a wide spectrum of perspectives. The study adopted a mixed-methods approach to capture both qualitative and quantitative data, enabling a nuanced examination of the diverse range of student experiences. Through open-ended questions, students expressed their motivations for opting for online education, highlighting factors like flexibility and the ability to balance other commitments. The quantitative data, on the other hand, allowed for statistical analyses that unveiled patterns in student preferences, attitudes, and perceived learning outcomes. The results of the survey revealed several key themes that underscore the multifaceted nature of online education. A substantial proportion of respondents lauded the flexibility of online learning, emphasizing how it empowers them to tailor their study schedules to accommodate work, family, and personal obligations. Moreover, the study illuminated the importance of well-designed digital platforms in facilitating effective engagement. Students who reported higher satisfaction levels often cited the availability of interactive content, discussion forums, and multimedia resources as enhancing their learning experiences. However, the research also unveiled challenges inherent to online education. A significant subset of participants expressed struggles with technical issues, ranging from unstable internet connections to difficulties navigating the digital interfaces of learning management systems. Such challenges occasionally impeded the learning process and underscored the need for comprehensive technical support structures. Furthermore, a sense of disconnection from peers and instructors was noted by some students, emphasizing the vital role of social interaction in fostering a conducive learning environment. The sheer scale of participant responses allowed for subgroup analyses, unveiling variations in experiences based on factors such as age, academic discipline, and prior familiarity with online tools. These insights provided a granular view of how different demographic segments perceive and engage with online education, guiding the formulation of targeted strategies to address their unique needs and concerns.



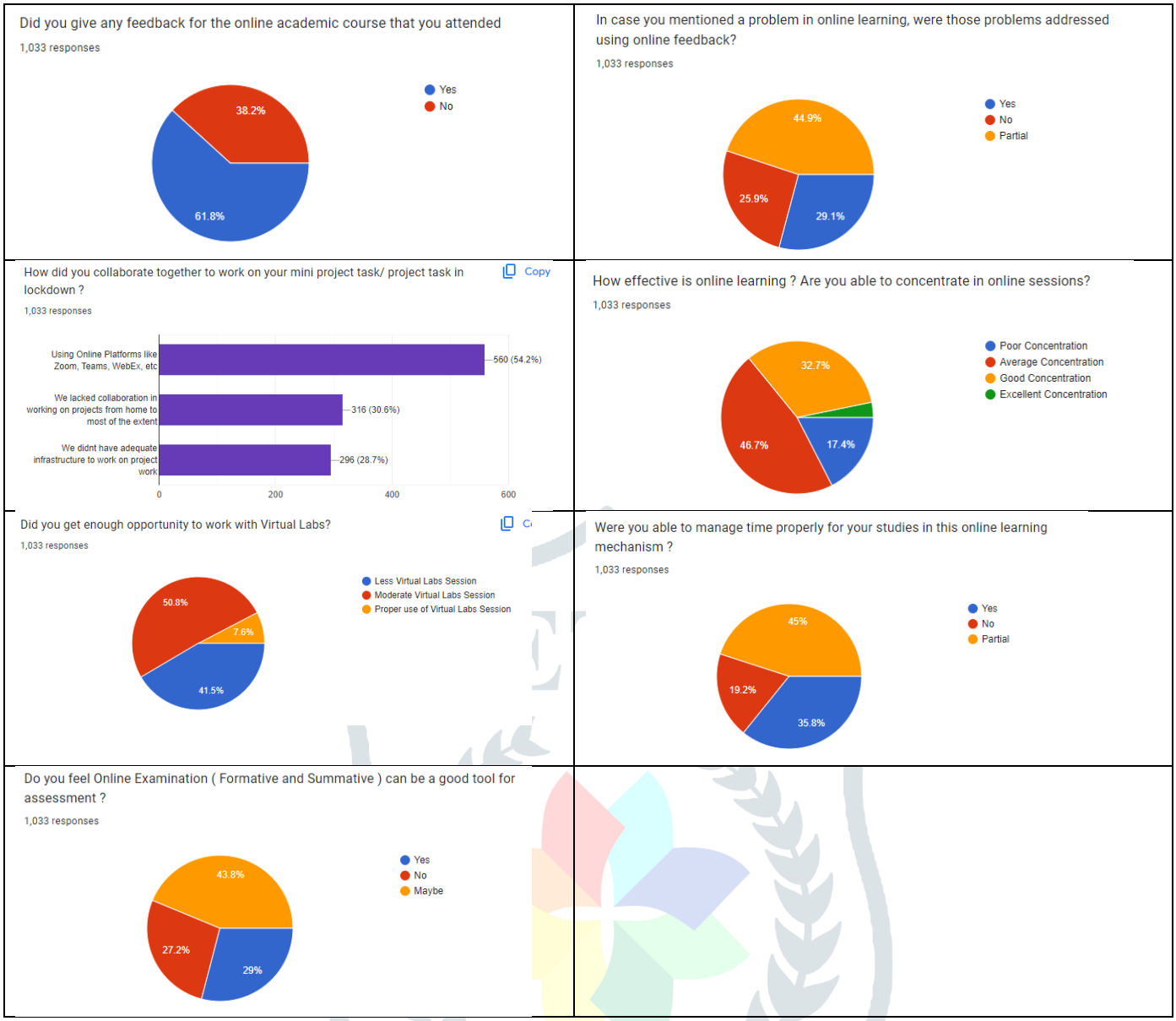


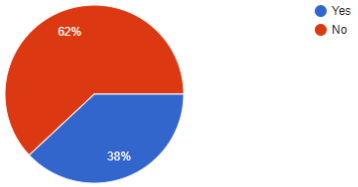
Figure 1: Analysis of Faculty Survey carried out on Online Education

IV. FACULTY SURVEY ON ONLINE EDUCATION

In response to the paradigm shift towards virtual learning, this study delves into the experiences and perspectives of educators, capturing the essence of their insights through an extensive survey. The research gathered input from a substantial participant pool, comprising 179 faculty members who engaged in a comprehensive survey designed to evaluate their perceptions, challenges, and opportunities encountered within the domain of online pedagogy. The involvement of 179 faculties in the survey underscores the significance of the study, as it reflects a diverse array of academic backgrounds and teaching contexts. Employing a mixed-methods approach, the research blends quantitative and qualitative data to offer a nuanced exploration of faculty experiences with online education. Open-ended questions provided educators with a platform to articulate their motivations for embracing virtual teaching, illuminating reasons such as the potential to reach wider audiences and the flexibility to innovate teaching methodologies. On the quantitative front, the data facilitated statistical analyses that unearthed patterns in faculty attitudes towards technology integration, instructional effectiveness, and support mechanisms. The outcomes of the survey unveiled pivotal themes that illuminate the multifaceted landscape of online education from the perspective of instructors. A substantial number of respondents acknowledged the opportunities for creativity that online platforms provide, emphasizing their ability to experiment with diverse teaching tools, multimedia resources, and innovative assessment strategies. This resonates with the broader discourse on educational technology's potential to catalyze transformative shifts in pedagogy. Nevertheless, the research also unveiled certain challenges that faculty members grapple with in the virtual teaching environment. A notable subset of participants voiced concerns about maintaining student engagement and fostering interactive learning experiences. The absence of immediate face-to-face interactions posed a notable hurdle in establishing rapport and gauging student understanding, highlighting the need for novel approaches to active participation and community-building within digital classrooms. Additionally, faculty respondents expressed a desire for professional development opportunities to enhance their digital literacy and instructional design skills, thereby ensuring effective adaptation to the evolving online educational landscape. The diverse backgrounds and academic disciplines represented within the faculty cohort allowed for deeper insights through subgroup analyses. These analyses illuminated variations in responses based on factors such as teaching experience, technological familiarity, and institutional support. Such differentiation enhanced the study's richness by offering a nuanced understanding of the varying ways educators approach and navigate the online teaching realm.

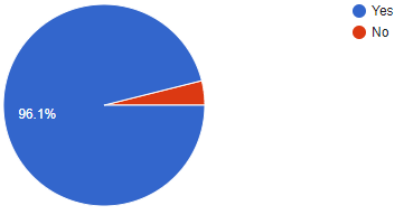
Have you conducted any online course before COVID-19 Lockdown ?

179 responses



Did you engage student using online learning techniques during Lock down?

179 responses



Which Tools were used by you for Online Learning

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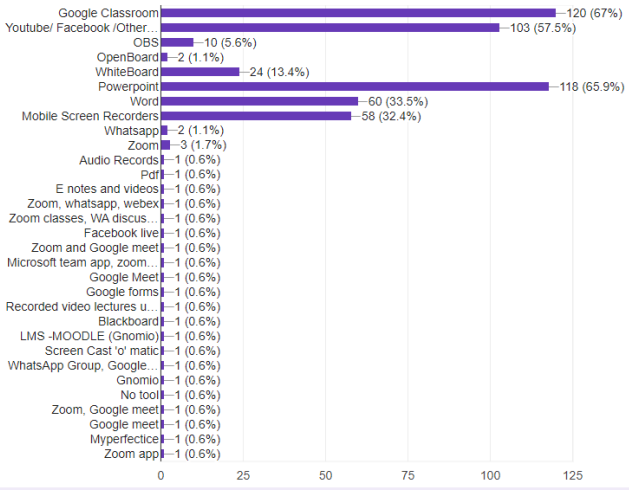
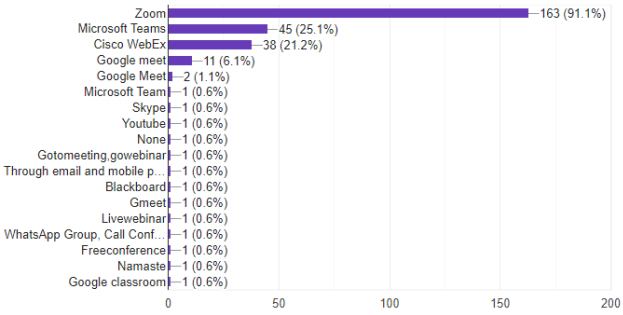
179 responses



Which Online Meeting Platform you used for Peer/ Student Meetings?

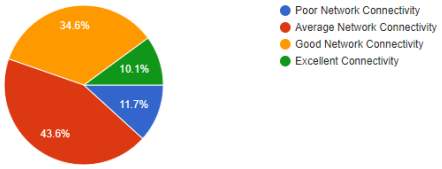
Co

179 responses



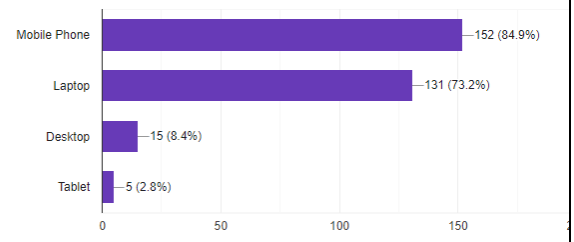
Did you have network issues at your end?

179 responses



Which Gadgets did you have for online Learning ?

179 responses



Which modes you used for those assessments ?

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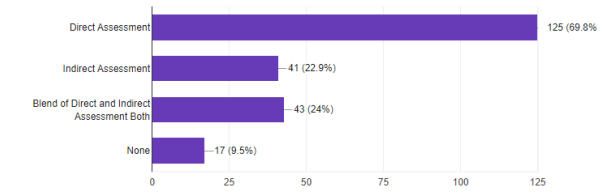

Which direct assessment methods you used ?

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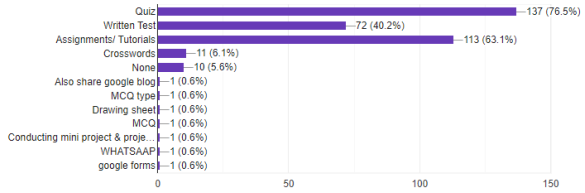
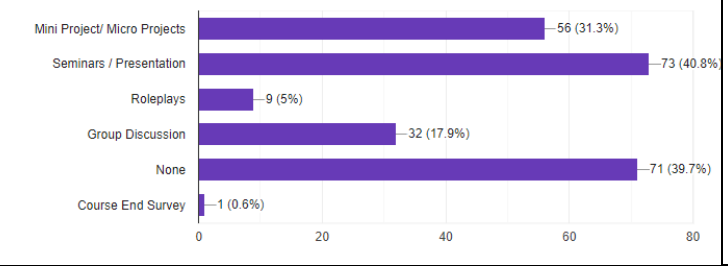
179 responses



Which indirect assessment methods you used ?

179 responses



Did you prefer creating you own video content for e-delivery or shared existing online video resources ?

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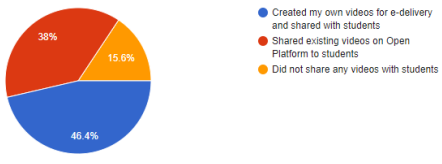
179 responses



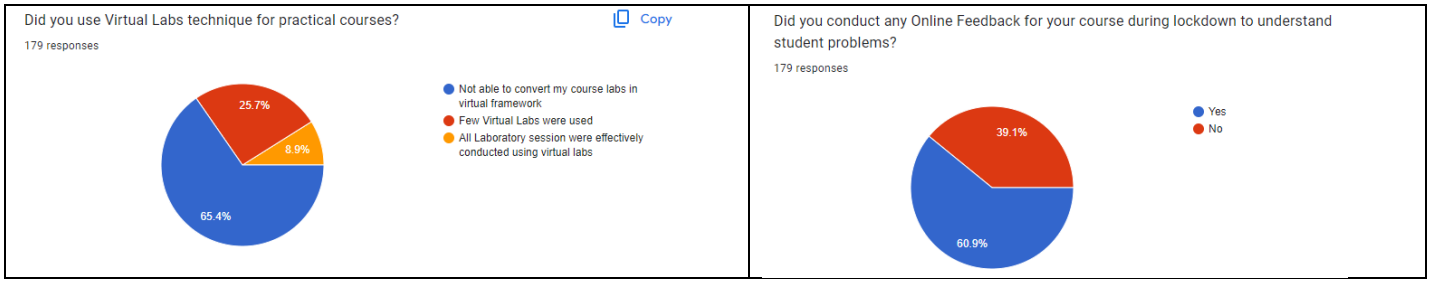


Figure 2: Analysis of Faculty Survey carried out on Online Education

V. CONLCUSION

In conclusion, the findings presented in this paper, "Online Education Using E-Learning Tools – A Survey," shed comprehensive light on the complex landscape of online education from both student and faculty perspectives. The extensive student survey, encompassing 1033 responses, revealed a nuanced understanding of the strengths and challenges of online learning. The flexibility offered by digital platforms emerged as a key advantage, allowing students to harmonize their educational pursuits with other commitments. Moreover, the survey illuminated the pivotal role of interactive content and engagement tools in enhancing the online learning experience. Nevertheless, technical obstacles and a perceived sense of isolation surfaced as notable concerns, underscoring the importance of robust technical support and innovative strategies to foster social interaction. Concurrently, the faculty survey, drawing insights from 179 responses, provided an in-depth exploration of educators' experiences with online pedagogy. The data highlighted the potential for creativity and innovation in digital teaching environments, as instructors capitalized on e-learning tools to experiment with diverse teaching methodologies. However, the challenges of sustaining student engagement and cultivating a sense of community were apparent, indicating a demand for tailored approaches to virtual interaction and effective utilization of multimedia resources. The survey also unveiled a desire among faculty members for professional development opportunities that enhance their digital literacy and instructional design capabilities.

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