

CHALLENGES IN ONLINE EDUCATION AND EFFECTIVE TEACHING METHODOLOGIES FOR FUTURE EDUCATION

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ABSTRACT

With increase in usage of technological devices and Covid-19 pandemic, online teaching has become a trend around the world. The objective of the teaching-learning process is achieved when the learner can easily understand the concepts during the period of learning. This is possible in online mode by revisiting the lectures many times and understanding the concepts in learner's own pace. The learner can make use of the online lectures of different subjects of their interest and not according to the fixed timetable. The main challenges in online teaching are assessment and evaluation. In contrast, pedagogical lecture has an advantage of face-to-face interaction of both teacher and learner and it is fruitful to the learner to clear the doubts on spot. Discipline, learning and interaction with same age group of people and conducting physical examinations are advantages. The major concerns include momentary concentration of the learner and non-repetition of missed classes.

Considering all these aspects, this work focuses on challenges in online teaching - learning and discusses its pros and cons based on a survey. The survey is considered from different sources which includes students, teachers, parents and alumni. Based on a questionnaire, different types of questions were put-forth to them. Based on their polling, inferences were drawn and conclusions were derived. Besides online and offline mode of learning and teaching, combined learning methodologies was also considered. Different ways of teaching include uploading of pre-recorded lectures from subject experts and assessments based on the same. The kind of teaching-learning should streamline quality of interactions, way of writing assignments and problem-solving skills. Smart assessments allow students to skip familiar content and progress to more challenging levels.

Inculcating conceptual and deep learning along with best references, exclusive demonstration and developing unique skill sets among students are today's requirements. In future, different types of online teaching along with offline teaching will set a path for more opportunities towards self-employment and start-ups with societal needs.

Keywords: *e - learning, face-to-face interaction, online teaching - learning, pandemic.*

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1. Introduction:

The outbreak of Covid-19 had brought in major lockdowns and quarantines throughout the world. It was found that 87% of the student population in the world were affected during that time [1]. During this outbreak, the impact on the educational system was worse and proper compensatory measures were required to cope with the scenario. It required quick decision making and immediate actions. Coping up with the unexpected effects required positive perspectives and experience of different stakeholders [2], [3].

Learning is very interesting and inspiring in regular face-to-face teaching-learning process, which was the only preferred mode before Covid-19 pandemic. Learning for knowledge acquisition and making social impact are possible by competent faculty in traditional teaching methodology [4]. The course instructor behavior and characteristics are also important for enjoyable learning. The teachers are also excellent in their respective fields to teach effectively with lot of fun. Their enthusiasm, being approachable and passion makes learning more interesting. This is possible only in class room teaching. The teachers can relate subjects to real life by their experience and critical thinking. The enthusiasm of teacher can be easily transferred to student in offline teaching. The humorous delivery of lectures and comments with innovative thinking give great satisfaction and positive feelings to students as well as teachers. This is one of the major advantages in face-to-face teaching methodology.

The problem-solving activities and critical thinking lead to active learning. Active learning is completely enjoyable with friends in off line education. The concepts and behaviors learnt in school and colleges will be useful for their career and life. The relationship between student and teacher is very important to make learning more useful. The teachers also take time to get to know about each student and understand them [5].

The interesting pedagogies like visual aids, creative assignments and watching videos in offline classes enhance the desire of learning. When teacher uses the interactive pedagogies in their class rooms, the students can easily understand the concepts along with the guidance of faculty in the classroom. The students can also improve their intelligence, smartness and intellectual conversations in the offline learning process. Learning and discussing about social issues and to make the future world better, offline teaching learning process is very essential [6].

After the COVID-19 pandemic spread, there has been an increasing switch over from traditional face-to-face teaching to online mode of teaching. This was an un-expected scenario and getting adapted to it was by itself a great challenge because of shutting down of schools, colleges and universities. Many were affected, hospitalized, stressed and some suffered for an indefinite period. Online teaching and related tools gained popularity among general public even to those who have never used it before. During the pandemic for the fear of health issues and person to person contact, online classes gained popularity [7]. Though it took quite some time for settling down to comfortable zones.

There were many reports and articles which questioned whether this shift to online based teaching would be a boon or bane. People were compelled to get accustomed to the digital environment especially in education[8]. Online classes pose a great challenge among the teacher fraternity where they need to invest more time and effort in content development that fits the curriculum, manage time, clear typical doubts and resolve internet connectivity constraints [9]. It has also become vital now-a-days that students develop technology-based skills which includes reasoning and communication. Sometime these online classes are more challenging for teachers than that of students. Different tools and methodologies have been developed or under development for the teaching community. The main advantage of online teaching is flexibility. Accurate planning is required to create e-learning materials and platforms [7]. Evaluation and grading are also the major challenge in on line teaching [10]. Quizzes are mostly used to evaluate the students. The lack in project development, conducting lab courses and evaluations are the major concerns in online teaching methodology.

In this computer world, various web resources have given opportunities for students of all disciplines to develop themselves and gain absolute knowledge of current trends. After pandemic it is observed that almost all students have gained a clarity in the use of on-line resources for gaining extra knowledge and career prospects. Truth is that face-to-face expressive motivation lag when learning happens in online mode. Students are prone to get into lazy state or silent mode, when the

teachers are not right in front of them. They tend to do other activities during the e- learning study periods too. There are Massive Open Online Courses (MOOCs) like platform and information and communication technology (ICT) which have evolved after the pandemic. Applications, such as Microsoft Teams, Google Meet, and Zoom are in common use avoiding waiting time and saving energy [11]. Sometimes these platforms/ applications seem to be learner- centric and differences among fast and slow learners are difficult to interpret [12]. In examination point of view, proctored exams were conducted with higher end software which were not cost effective rather. Virtual classes are welcome if the recent trends are of concern.

In future, when the need is to inculcate more knowledge in this competitive world, online along with offline teaching-learning will be of great benefit. The quality of education should have arise and that is of major concern to young minds, their tutors as well as parents. The competency of computers, workload, self regulation, family and social support are the deciding factors of effectiveness of any learning procedure. All around the world, people are working towards development of creative approaches that makes education more interesting and that makes new learning methodologies a possible platform for future generations.

In current scenario, integrating technology in teaching-learning enables us to teach students more comfortably certain topics, solve more mathematical problems and also ready to meet the demands of the future technology under any circumstances. No two students are the same in the way of thinking, studying or responding. Frequent interactions are definitely required for a student's progress, especially among slow learners. Learning from online and offline can be a possible choice in future so that students according to their capability can choose comfortably that best suits their thinking ability. Intelligence Quotient (IQ) and emotional quotient (EQ) may be improved in the process. Both self-awareness and social awareness may be inculcated in them to lead a better life style [13]. Quality of teaching - learning process and ability to acquire knowledge will definitely be enhanced when learning outside classrooms are introduced. Better relationship could also be established between teacher-student, student -student, student- alumni and parent -teacher with continuous monitoring and updates. Cutting edge technologies can be given a wider vision if such teaching-learning is introduced and adopted. Blended learning would pose positive challenges among teachers to become more specialized and vigilant to use different tools or methods to facilitate interesting learning procedures.

Blended learning support student-centered learning procedures but may have a great impact on education in the forth coming years. This kind of environment provides collaborative teaching for

problem solving and project works at any time and at any place. Some barriers which include language, low self-esteem and low confidence shall also be improved. The employment of creative approaches help in online training and makes learning more interactive for enthusiastic learners.

The educational sector needs lot of solutions to improve learning, assessment and research after the rapid development of technical and scientific revolution [14]. Kenney and Newcombe [15] found that different methodologies can be introduced to make studies enjoyable and interesting.

The study is focused to study the challenges in online teaching and learning among the higher education students amidst a chaotic situation. The need to face education challenges, possible closure of institutions, compensate for continuous learning and sustained teaching in spite of a pandemic situation is taken up. The perspectives of teachers, students and stake holders are considered and analyzed for future prospectus of students.

2. Methodology:

Experimental Survey and Study:

Keeping in mind the lessons that Covid-19 pandemic like situation taught everyone and to cope up future changes, a survey was carried out among different group of subjects who had faced the scenario and have returned back to traditional class room learning experience. The survey questions were framed keeping in mind the past scenarios, feedback from different stake holders, different environment of study and health issues. The survey was made among the currently studying students from various year and disciplines which includes students who underwent online classes during the pandemic period, college passed out candidates, teachers of both government and private colleges/Universities and parents. Figure 1 shows the work flow adopted for carrying out the survey in order to analyze the future trends and challenges.

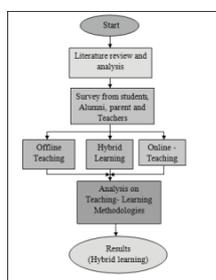


Figure 1 Overall Flow diagram of the proposed work

The questions for the survey were carefully chosen to meet out all aspects and prepare for future possibilities. The demographic data consist of the name, age, place where they live, studies/designation, name and place of the institution. The questionnaire starts with what type of teaching is most preferred in education after pandemic. The mode of learning preferred by students in current scenario was also surveyed. Among the three types of learning, namely online, offline and combination of online and offline, which mode is reachable to students was also questioned. During the pandemic period since the online learning/teaching was the only mode, question was put forth based on whether the process was self-learning or knowledge sharing based or time consuming. One or more possibilities were given for answering. The usefulness of the offline teaching was also questioned. The kind of learning that is supported by most people was also questioned. Preferences were asked in a scale of 1 to 10 for all the different teaching -learning process. The problem solving and doubt clarification issue was also considered in the questionnaire. The platform for slow learners was also addressed and preference was asked. The preferred mode of examination was also one among the survey question. The effects of online teaching were asked pertaining to online resource exploration, health impact and proper evaluation. Finally, out of the three types of teaching-learning, best choice for further betterment of the process of teaching - learning was asked to be answered. The answers given across the group was carefully consolidated and analyzed. The survey yielded interesting results and the observation were recorded. Inferences were obtained based on the survey made among the different groups.

3. Results and Discussion:

Data collection:

A total of 519 response was received from various subjects consisting of teachers, students (currently undergoing offline classes and had an exposure to online mode in the past), alumni (includes college/University passed out students, who studied online classes during pandemic time) and parents. Different types of critical question were prepared and given. All the participants actively involved in the feedback process and have given their response. After the survey from teachers, students and stakeholders, the result obtained were analyzed quantitatively. The outcome of the various studies conducted were studied and analyzed. Inferences were derived from them.

Representation of the obtained results:

The various groups considered and the sample representation of the questions put forth for feedback to students, alumni, teachers and parents are presented here in graphical form. The response received along with its statistics are also presented.

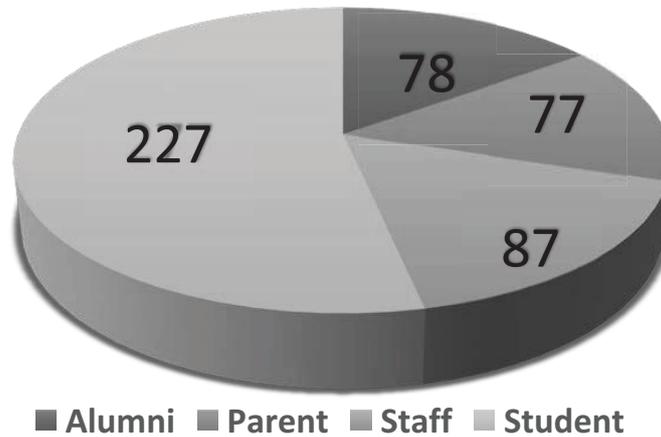


Figure 2 Total response of the survey

Figure 2 shows the total response received after the conduct of the survey. Out of the 519 response received, 277 response was given by students, 87 by staff members, 78 by Alumni and 77 by parents.

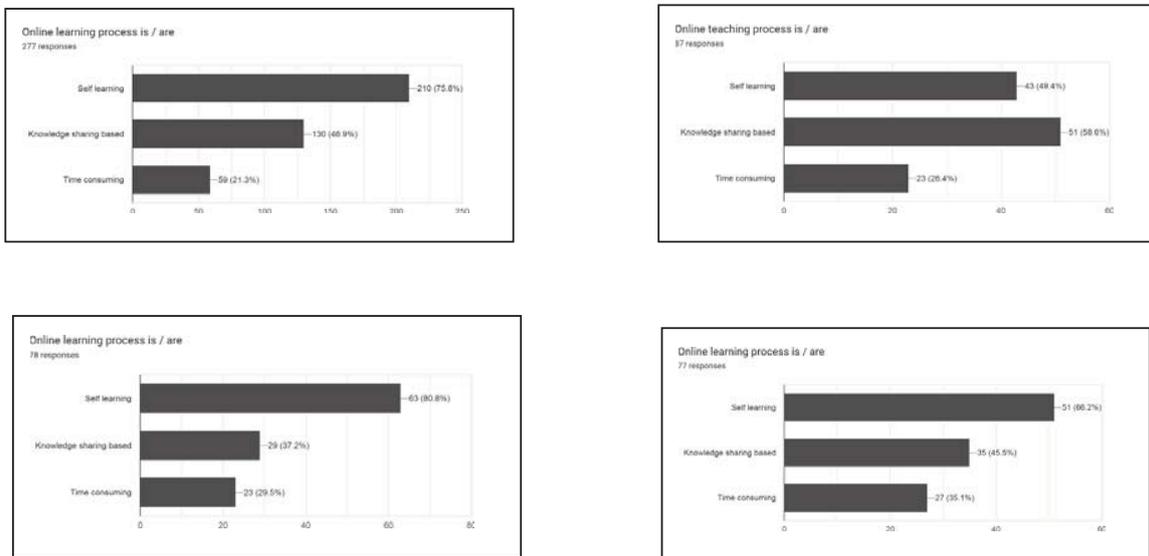


Figure 3 Statistics corresponding to online teaching/learning process

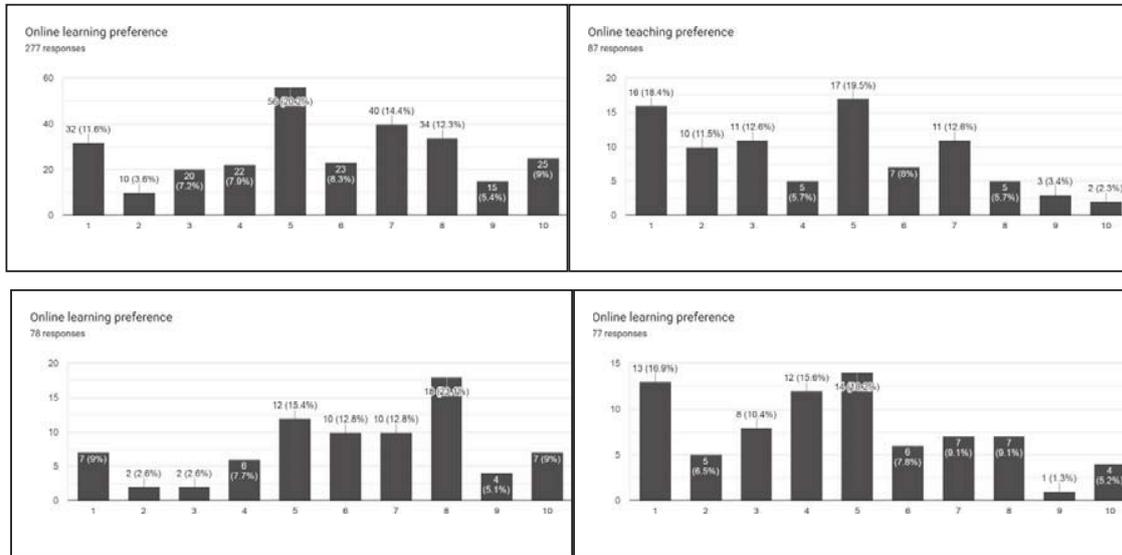


Figure 4 Statistics corresponding to offline teaching/learning preference

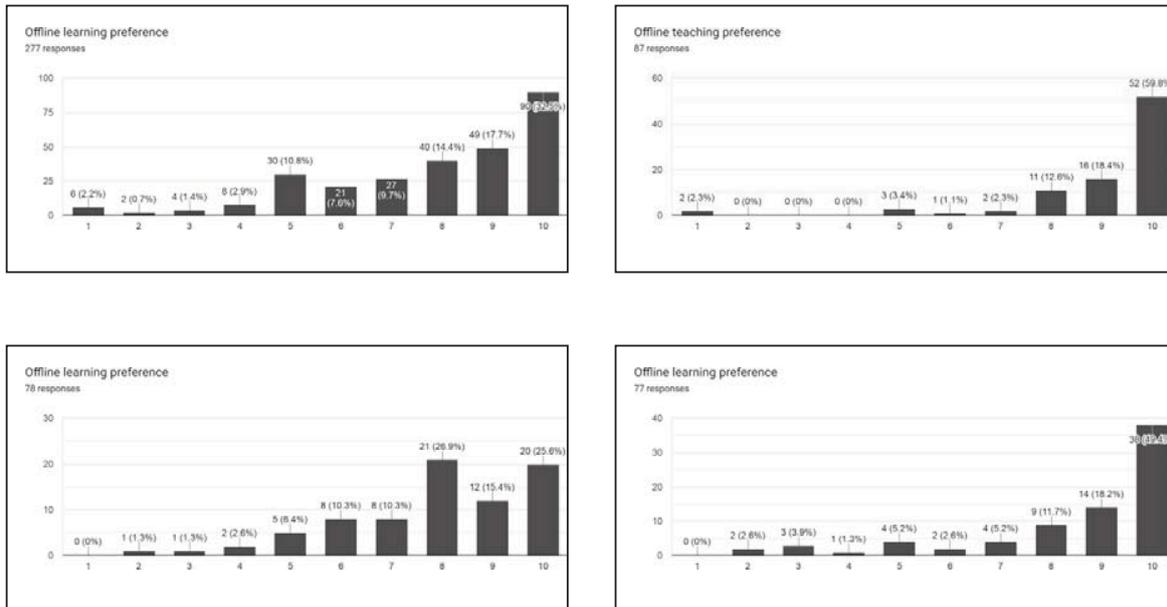


Figure 5 Statistics corresponding to offline teaching/learning preference

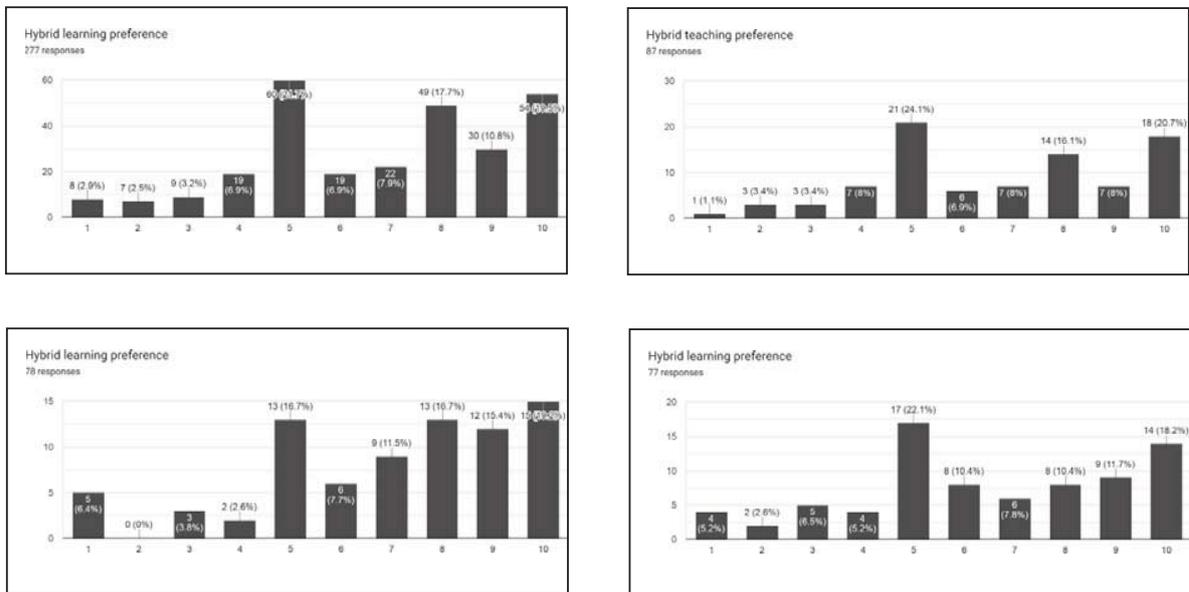


Figure 6 Statistics corresponding to hybrid teaching/learning preference

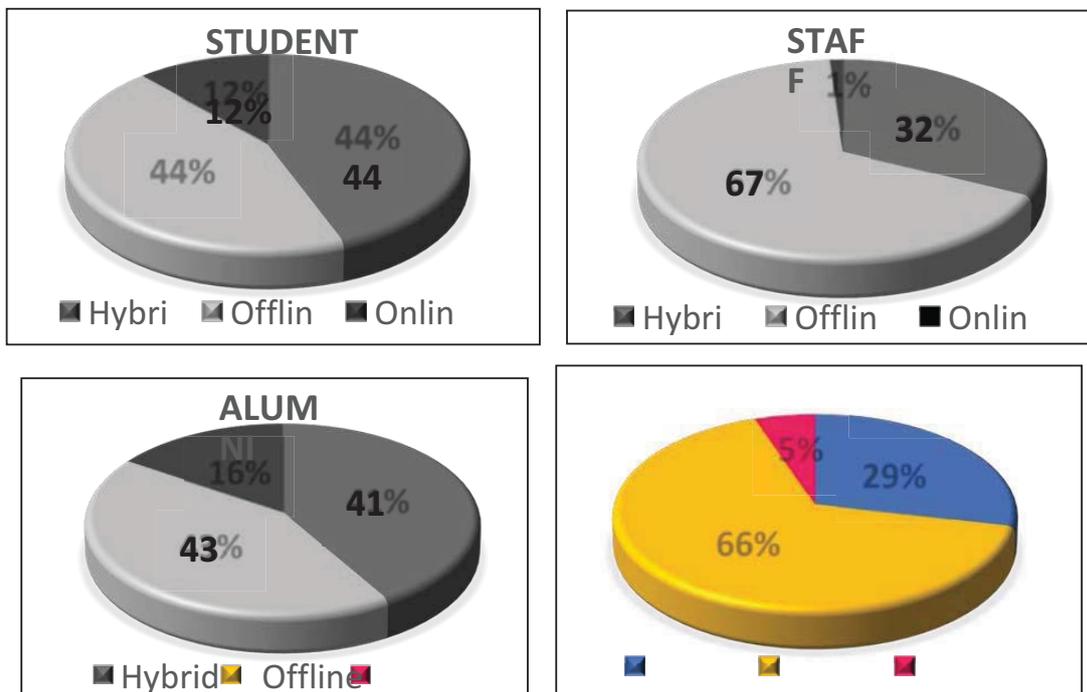


Figure 7 Final choice of learning by different groups

Figure 3, 4, 5 and 6 shows the statistics received among the groups based on the process and preferences in a scale of 1 to 10. Figure 7 shows the final choice of learning by considering knowledge based education, teaching resources, health issues, valuation and examination.

Discussion and Analysis:

The results obtained were analyzed in terms of each and every question that was asked. Some of the observations are as follows: Based on the first question asked to students, alumni and parents which mode of learning is preferred now -a-days, it was found that higher percentage was opted for combined learning compared to online and offline learning. With respect to doubt clarification, all the four category people opted high percentage only for offline teaching. The platform which is more suitable for slow learners was also chosen as offline mode. With regard to online learning process, when questioned to all the four groups, it was found that students, alumni and parents felt it was more of self-learning based and opted knowledge sharing and time consuming comparatively less. Whereas, teachers felt that knowledge sharing was predominant in online rather than the other two. With regard to learning in offline mode, all four groups felt it was useful and the percentage which gave 'not useful or not able to judge' was comparatively very less. With respect to the same question, the response was given as 81%, 97%, 90% and 87% by student, teacher, alumni and parent respectively. In the question based on what kind of blended learning can happen with respect to theory and lab course combination in online and offline mode, it was observed that students preferred the following combination of theory-offline, lab-virtual as 31% and theory-online, lab-offline as 69%. Similar trend was observed along the teachers response too. Alumni and parents gave the theory-online and lab-offline percentage higher than students and teachers. All the four groups were asked to give a scale between 1 to 10 for online, offline and hybrid modes. Offline learning preference were given higher scale (8 to 10) by all of them. With respect to hybrid learning, the scale preference was between 5 to 10 mostly. Neutral response was received with respect to online learning i.e., more numbers were oriented towards the scale 5. With respect to the preferred mode of examination, all the four groups namely gave the highest preference for offline exams. The results were as follows: 42% - offline, 26% -Hybrid, 32% - online in case of students, 90% - offline, 8% -Hybrid, 2% - online in case of teachers, 46%- offline, 31% - Hybrid, 23% - online in case of alumni students and 80% - offline, 17% - Hybrid, 3% - online in case of parents. Some questions were asked exclusively to teachers such as, which mode is reachable to students and the response

was 78% offline, 21% hybrid and online 1%. In another question the preferred teaching mode was asked to teachers and the response was 50% for offline , 45% hybrid and 5% online.

On a concluding question, when the groups were asked their preference by considering the knowledge based education, teaching resources , health issues , valuation and examination, the final choice was obtained as follows: Equal percentage of students (44%) opted the choice of offline and hybrid learning. Only 12% students preferred online for learning. Alumni almost gave equal preference for offline (43%) and hybrid (41%), remaining 16% preferred online. For the same question, teacher's choice were high (67%) for offline with hybrid being 32% and online 1%. Parent's choice was also high (66%) for offline. Hybrid mode was given 29% preference and online mode was given preference of 5% by parents.

Students may be encouraged game based learning, student centered learning, Experiential learning and blended learning besides the standard way of teaching to get better outcomes.

Future Directions:

In future, a comparative study can be made for further improvement of students who are away from cities or in villages with less internet like facilities. The analysis could also be extended to subject wise feedback for different courses so as to get further clarity and decide over possible type of teaching in future in case of any emergency or pandemic like situations.

Conclusion:

India is awaiting technically sound and competent youngsters in the future. With greater exposure to technology and devices, it is observed that in future, online learning will gain more momentum. The restriction on confined syllabus, abroad exposure and study time issues can be overcome by online learning. Real time supporting teachers with more expertise, real time assignment/projects, good health and perfectly invigilated examination will help the student to excel better not only in studies but also in all walks of life. With the evolving technology, one has to know to cope with recent trends. Blended learning can possibly be the future trend and studies also portray that students are willing to take up this challenge. Colleges and Universities have to look forward for flexible teaching methodologies and learning modalities, beyond syllabus activities, training faculty members, upgrade institute infrastructure and implement strategic plans with timely updates. Flipped classroom teaching, recorded lectures, virtual white board, some self-study topics and healthy group discussions may bring a lot of change in the future education system.

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