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LEARNING THROUGH ICT – ROLE OF INDIAN HIGHER EDUCATION PLATFORMS DURING PANDEMIC

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ABSTRACT

Pandemic situation and subsequent lockdown had forced the education system to make use of ICT tools as an alternative to continue studies. With the advent of technological advancement especially in terms of the usage of internet and web based technologies; the traditional classroom based education is posed with disruptive innovations in the way the education is delivered to the student community. The present study tries to analyze the situation in the higher education teaching due to the pandemic situation by evaluating the various pedagogies adopted along with their opportunities and respective challenges. Comparative analyses of the various methods, portals which are based on the ICT are evaluated. Several directions are given by the regulatory bodies in promoting the ICT based model of education and few gaps are identified through the SWOT analyses in the existing virtual classroom applications. It is being observed that there is a need to have a comprehensive policy to bridge the identified gaps persistent in the traditional teaching pedagogies after a decent consideration of the strengths and weaknesses of the ICT based models that are in existence.

KEYWORDS

ICT based Learning, ICT Usage, UGC Recommendations, SWAYAM, Indian Higher Education

INTRODUCTION

Socio-economic diversity in the country is compelling the authorities to have various strategies for effective inclusions in the higher education front. Several options are available for the students to pursue their education such as *regular mode*, *part time mode* and *distance mode*. Despite these variations in the delivery mechanism offered by various higher education institutions, the curriculums of these are synchronized and are also ensured that the award of the certifications after the completion of the respective courses were an endorsement of the

attained skill set during their course of study (*AISHE 2018*). The teaching pedagogy is dominated through Chalk and Talk in the regular traditional method while in distance mode, self paced learning content is provided to the students who have their own pace of self learning from the given material. Part time mode is a combination of the above said modes of education (*Asongu 2019*). Till recently the usage of ICT in the education institutions is confined through PowerPoint presentations and rare usage of the video lectures (*Batanero 2019*). The major constituents in the process of imparting higher education in India are the *Universities, Affiliated Colleges* – which follow the curriculum prescribed by the affiliating university; and *Standalone Institutions* which have autonomy in deciding the curriculum etc. and can award vocational diploma or degree in few specified areas of study (*IRINS 2018*). These institutions are either completely funded by the government, partially funded by the government nor completely operated by individuals through societies. There are around 989 universities, 41887 colleges, 10562 standalone institutions which form the strong network for imparting higher education to over 350 million students in the country (*AISCHE 2019*). University Grants Commission along with All India Council of Technical Education is the regulators for higher education.

With the usage of ICT methods, the mode of learning is being completely revolutionized. In the traditional mode of face to face learning there is restriction on the number of participants while with the usage of ICT based learning more number of participants can be permitted into the session and also has the option of recording the classes and the same can be viewed at a later time which has larger accessibility and visibility (*Bayerlein 2015*). With the changes in the technology there is a huge variation in the delivery methods adopted both in India and across the world where the respective governments along with UNO through its SDG4 programs are aiming to have quality, equitable and inclusive education (*Nguyen 2018*). ICT enabled the delivery of the session even on social media platforms also which is applicable to both the regular as well as the distance mode of education (*ET Bureau 2018*). With the effective usage of ICT where the information is available equally among the learners resulted eradication of several barriers among the learners such as region, gender, religion, age, income group etc thereby leading to gender equality and empower girls (*Bharucha 2018*).

The present pandemic situation has posed several challenges to the education system with special emphasis on the regular mode of education where the Indian regulatory authority UGC had issued several guidelines from time to time for promoting online education platforms so that there is no disturbance to the education of the students (**Webb 2017**). The present study is aimed at evaluating the various tools and websites along with their comparative analysis which are suggested by the regulatory body over the period of time (**Richter 2009**). As part of the study the features, functionalities, usefulness for the users, readiness of the teachers regarding these various options are studied (**Research and Markets 2020**). As part of the study all the information that are available on the websites of UGC, MHRD, MHRD, INFLIBNET etc and other websites containing relevant ICT models are being considered (**NMEICT 2020**).

LITERATURE REVIEW

It is observed that the ICT are widely used in the developed countries in the domains of medical, science, learning etc both in the regular as well as distance mode of education where the course outcomes are largely dependent on various facets such as the availability of the resources, the nature of the subject, and behavioural traits of the learners (**Maniu 2019**). There are continuous efforts by inducing innovative strategies to improve the content preparation and delivery mechanisms (**Dwivedi 2019**). Despite the innovative strategies, the success of ICT depends on the customization and motivation of the teachers as per the needs of the learners (**Zilka 2019**). In developing country like India there are various efforts made by the government and other IT companies in introducing ICT various formats which has their own factors of hindrance in its implementation (**Schultz 2020**). Some of the initiatives adopted are the usage of the cloud which helped in reducing the costs involved in the implementation of ICT (**Google 2020**). Despite these efforts and diversified cultures, languages and population there needs to be a comprehensive and feasible approach which best suits the Indian scenario (**Phutela 2020**). It is viewed that ICT is a bright facilitator in improving the efficiency and effectiveness of the major domains of teaching and thereby improve the competitiveness in the delivery mechanism (**Islam Mok 2019**). The things which were viewed as horrendous were made possible with the usage of technology which revolutionized the learning methodology (**Arrosagaray 2019**). There are few factors which impact the area of knowledge and the usage of ICT as the perception of the learners is important on the usage of the ICT. Several studies in other countries like Spain were

conducted which revealed the impact of ICT on the students about their ability, attitude of the students especially in higher education through descriptive analytical presentations (**Sharma 2019**). It is also viewed that the usages of ICT is also applied by entrepreneurs which aims at bridging the digital divide along with the effective implementation of ICT based learning based on the swift development of the prevailing information system (**Gvaramadze 2012**). By implementing the ICT as teaching methodology can be augmented with the usage of simulation, visualization and presentation of the information (**Millan 2019**). There are various factors which affect the teacher educator's technology integration and assessed the teacher training on ICT to get better benefits (**Picatoste 2018**).

It is evident that the ICT modes of teaching and learning have its presence in majority of the countries irrespective of the development of the countries (**Dlodlo 2009**). Effective and efficient usages of the ICT are prominent in the areas of Medical, Mathematics, and Science etc through the integration of automation and simulation benefits the learners (**Iniesta 2013**). It is observed that there is need to evaluate the developments of ICT in promoting the digitization of the learning and teaching in the country (**Doyle 2010**). In addition to this the need of other factors such as target audience, methodology adopted, visibility, learning outcomes, purpose, flexibility, technology adopted, structure etc (**Collis 2002**).

PANDEMIC SITUATION – OPPORTUNITIES AND CHALLENGES FOR HIGHER EDUCATION

With the identification of a contagious virus, named Covid-19, in China and subsequently in other parts of the world had forced the governments across the globe to impose lockdown situation due to which all the activities pertaining to industrial, services, offices, banking, financial services, social, educational institutions etc. were disrupted and made standstill. With the spread of the virus, the Indian government had started closing the educational institutions from the first week of week and by third week all the institutions were closed. The lockdown which was for 21 days in the first phase was later extended through several other phases. The closure of the educational institutions was experienced by several across the globe (**ET Online 2020**). There are few statistical data released by UNESCO which estimated that around 1.25 billion learners were affected due to this sudden lockdown spread across 158 countries signifying the magnitude of damage for the learners across the globe

(UNESCO 2020). With this sudden polarization of the situation, the teachers started using social media such as WhatsApp, Telegram etc and regular mails to connect to the students. The situations had forced the teachers and students to start using Microsoft Teams, Cisco, Webex, Zoom, Google Meet etc to render the online classes, without much training for the both the ends to impart online education in place of the real classroom environment (Shrivastava 2020). The usage of ICT modes were adopted by the untrained students to provide education to the students with the motive of not disturbing their academic calendar. In addition to these modes of imparting education, the higher education institutions with the help of teachers and other experts in the domain to prepare subject content which was circulated among the students and also hosted on their institution websites etc where the students can read the content of their subjects (Thompson 2019).

With the implementation of the lockdown and maintenance of social distance among the people, the regular classroom education was hindered and forced the institutions and teachers to adapt to the new mode of online education. Though there are advantages to this mode of education certain challenges were posed. Some of them include the situation where the student may be residing at a far of place from his regular place of study and there are chances that they may be residing at a remote place the network connectivity issues may persist. There is clear difference in the tele-density among the rural and urban places and the percentage of users of smart phones is less especially among the rural areas also leading to the reduction in the usage of tele-density (Jaganmohan 2020). With these variations in the tele-density in the areas which can dampen the vision of online delivery mechanism of the courses by the higher education institutions. The present day education system is based on the semester model where at the time of the lockdown in the country majority of the programs were in full swing and the assessments for the students were undertaken in the form of quizzes, presentations, tests, group discussions etc where there is direct interaction between the student and the teacher (Notices of UGC 2020). This connectivity was lost due to the pandemic situation and there were very few options left at the disposal of both the students and teachers. The online platforms to some extent tried to bridge the gap between these two important components of higher education which are located at different locations. The other challenge is on the conduct of the online classes where there is need to have good infrastructural requirements like the availability of internet connection, laptop, desktop, mobile, speakers, mike etc and the availability of these resources is scare as the markets for

the infrastructures are closed due to the sudden lockdown. The mobile connectivity is the only readily available option through which the online classes can be conducted and the problem is with the connectivity of the internet as the bandwidth or the signal connectivity is different at different locations of the country (**Cabanero 2009**). The other challenge is the readiness of the teachers for the usage of these resources as the teachers were not used to the usage of these mode of teaching in the regular class teaching mechanism. Even among the faculty also some of the teachers having a strong technical background were in a position to handle these ICT modes of learning at ease while other stream faculty found it very difficult in handling the situation pertaining to online education (**Hill 2017**).

VIRTUAL MEETING BEING A FEASIBLE SOLUTION

As discussed it is vital to have an environment, to the maximum possible extent, which imbibes the classroom experience along with the conduct of other planned academic activities. All these created the need to have a virtual meeting where the classroom activities can be undertaken in virtual mode and at the sametime assume the real classroom environment. There are several applications which are in existence in the market which cater to meet the conduct of the meeting in a virtual mode such as Microsoft Teams, Zoom, Cisco Webex, BlackBoard etc. Some of the significant features of some of these platforms include the availability of white board which permitted the presenter to write on the screen and explain the concepts, file sharing, screen sharing which permitted the attendee to see the screen of the presenter, recording of the class which give a greater flexibility to the users to view the class as and when they have any doubt on the completed lecture session. These recordings permitted the users to access it any number of times and also from any location as per the requirements of the attendees who in this situation are the students. None of the educational institutions had anticipated this kind of a situation where the need to create a virtual environment to conduct the classes and so no institution had made any kind of allocation of funds for the procurement of these services needed for the creation of virtual classrooms. Also the situation had forced all the important stakeholders of higher education institutions to probe for suitable solution with zero or minimum of financial expenditure, which is also user friendly, so that they can recommence the pending academic activities so that the academic calendar is completed with minimum deviation. Out of the various platforms available for the users, Zoom and Google Meet were the highest searched applications by the teachers and students which emerged as a feasible solution to the

prevailing situation. These technologies are also used by other professionals to have virtual interaction as part of continuing their business activities. Pandemic situation had revolutionized the thought process of the education institutions and also posed the need to continue with the virtual classroom, long distance connectivity. It is also viewed that the usage of these virtual environments for the conduct of the classes in the higher education institutions will be growing manifolds from the present level of usage or penetration.

FEW PLATFORMS RECOMMENDED FOR THE INDIAN HIGHER EDUCATION INSTITUTIONS

From the ongoing activities it can be assumed that the implementation of the ICT tools are set to renovate the methods adopted in teaching and learning mechanisms. The statutory bodies had taken the initiative of promoting online education and at the sametime promote the usage of the digital resources which are being developed over the years for qualitative education system in the country. Some of the significant digital resources which are available NPTEL, SWAYAM, Digital Libraries, SWAYAM Prabha to name a few which are aimed at ease of access to the content pertaining to various programs and subjects which will enrich the knowledge levels of the users. The objectives of various ICT tools are discussed herewith where the advantages and challenges that are bundled with these modes can be evaluated.

Study Webs of Active Learning for Young Aspiring Minds (SWAYAM)

As part of the revised education policy SWAYAM was initiated in 2017 with the motive of providing equitable access to quality content. It is aimed at providing access to the teaching and learning resources by all without any kind of discrimination. This particular platform has the learning resources starting from Upper Primary to Post Graduation programs where the content is available free of cost to all the users round the clock. The activities of SWAYAM are managed and operated by various agencies like NCERT, CEC, UGC, AICTE, NIOS, IGNOU etc who are the pioneers in their respective domain areas. The courses offered as part of SWAYAM are made available to the users in different formats like – online video lectures, reading material can either be printed or downloaded which is specially developed, online forum which is aimed at clarifying any doubts arising during the study of the content, and self assessment through tests and quizzes (*NPTEL 2020*). University Grants Commission had drafted a credit framework mechanism where the students who undergo and complete online

courses under the SWAYAM platform are entitled for transfer of credits to the university course. The universities were asked to identify the courses where this kind of credit transfers can be implemented and also limited the credit transfer to 20% of the total program syllabus in which the student is pursuing his studies. The success of SWAYAM needs to be attributed to the teachers who are prominent in their respective subject along with efforts of IIT Madras which provided the technical assistance beside Google and NPTEL.

FREE / LIBRE and OPEN SOURCE SOFTWARE for EDUCATION (FOSSEE)

It is the initiative of MHRD which is aimed at promoting the usage of open source softwares instead of the usage of proprietary softwares which are costly and excluded few from the access to the brightest brains of the country. Some of the significant projects under this initiative include Ardivino, Python, Open foam, Scilab, DWSIM etc. In addition to the provision of open sources softwares as part of the project few other initiatives such as Textbook Companion, Lab Migration, Workshops, Spoken Tutorials, Conferences, FOSSEE Forums. As part of the initiative, *Textbook Companion* is focused on providing open access to the textbooks in online mode which are useful for both the student and teacher community. In this section major emphasis is laid on the practical based learning process and documentation of the projects. To promote the usage of FOSSEE by the higher education institutions, the *Migration of Labs* is vital which will attract the students and institutions to the new platform from the presently used practices. It is aimed at usage of open source labs that are compatible with those of FOSSEE thereby migrate the institutions from the presently used proprietary softwares which are charged. The workshops are also conducted by FOSSEE to ensure certain levels of training are imparted to the teachers in using these labs. As part of the project, FOSSEE conducts *Conferences* on regular basis so that there is continuous and free flow of new ideas among the participants which will improve their knowledge and skill set on their areas of interest. Conferences are conducted where the eminent persons in those areas are invited and are made to address the teachers and student fraternity so that there is awareness of the latest happening in a particular domain is spread. The researchers, academicians etc from diverse areas tend to distribute their research activities which will benefit all. Scipy Conference is one of its type which is Python related package and support the activities such as the scientific research where the new buzzing ideas are shared among the participants thereby the knowledge is enriched. *FOSSEE Forum* was initiated to share the thoughts among the community which can be useful for all. Also any doubts arising in a

particular domain area can be addressed by renowned persons in that area which will always be helpful for the brightest minds. The other initiative of FOSSEE is Application of Spoken Tutorials aimed at enabling the students to learn their interested subjects through online in text and audio & video mode which can be accessed as per the convenience of the learners. The content on this platform is available various languages so that it can be accessed by many which can be easily understandable in their comfortable language. The content is more useful for the UG and PG students from engineering, commerce, science, management, technology etc. The students who intend to join the course can be categorized as per their level of expertise like beginners, intermediate and expert / advanced. There is another advantage with this project is that the concerned subject teacher can segregate the students into groups and customize the teaching activities as per the level of the students. All the activities of FOSSEE are aimed to voyage the higher education institutions, teachers and students using proprietary software towards the usage of open source software which will be beneficial to all the stakeholders of the higher education.

e-YANTRA

This is the platform which is aimed at providing advanced lab facilities to both the teaching as well as student fraternity so as to improve the scientific and technical skills of the significant stakeholders of higher education. The major emphasis is on the provision of embedded system on virtual / electronic platform. In order to expand the base of the reach, the institution has started entering into agreements with other institutions which are having similar kind of idea. This mode of collaboration tends to pool the resources which are available with various institutions and some may not be fully utilized. Several competitions are conducted for the students to enhance their knowledge, skill sets so that the brightest ideas and brains can be attracted to a single possible location. e-Robotics is one such initiative which is aimed at attracting the brightest brains in those areas. Regarding the faculty several FDPs are conducted to enhance the teaching skills of the teachers and also make them aware of the latest happening in their respective fields. There are more than 350 labs which are joined together across the country and more than 5000 teachers had attended the FDPs conducted by the institution.

VIRTUAL LABS

These are also similar to that of e-Yantra concept where the lab resources are made available in the virtual mode. The lab is a combination of both the software and hardware equipments depending on the type of lab under consideration. These labs are mainly focused on those which comprise of expensive resources which can't be procured many institutions alone. These kind of formation of virtual labs and being part of them enable the learners and teachers to have access to these labs which otherwise mayn't be possible. The resource comprises of animated demonstration of the experiments, audio & video lectures and sharing enables the learners to develop enthusiasm as the resources are rare to use. The various higher education institutions who intend to contribute to this idea can participate in the designed program and also share the resources at their disposal. Some of the significant features of Virtual Labs are that equations are used to represent the problems, simulation of real world problems, conducting the experiments even from remote places, imitate the available virtual resources to resemble the physical labs, conducting the experiments and collecting the results and analyzing the data.

SWAYAM Prabha

This is a 24*7 DTH channel providing quality education programs on television which are transmitted with the usage of GSAT-15 satellite. The program that is telecasted on a day is repeated 5 times on the same day so that the learners can access the content as per their convenience. One interesting aspect about this program is that on an average 4 hours of new content is being telecasted on the everyday to enrich the knowledge of the learners. The content that is covered in these programs range from Under Graduate and Post Graduation courses as part of the higher education ranging all disciplines like Law, Science, Arts, Commerce, Management. Regarding the school education, content that is being telecasted covers from upper secondary to twelfth standard. In addition to the regular academic courses, the information that is required for competitive examinations is also provided on regular basis. The most efficient faculty in the concerned areas is part of preparing the content for each subject. The number of teachers who are preparing and presenting the content is increasing on a continuous basis. This platform is aimed at providing the content and no certification is issued to the participants. The activities which are undertaken under this platform are being coordinated by eminent institutions such as AICTE, NPTEL, NITTR, NCERT, IGNOU, NIOS, UGC, IIM-B etc.

NATIONAL DIGITAL LIBRARY OF INDIA (NDLI)

This is the initiative which is aimed at maintaining the depository of online content of the subjects that cater to the academic needs of students ranging from upper primary school to post graduation fostered into various disciplines such as Engineering, Technology, Law, Commerce, Management, Sciences, and Humanities etc. The content is made available in various languages so the learners are not deprived of the quality content due to lack of awareness in any particular language. N-LIST is made available for higher education institutions through proper subscription to have proper sanctity of the usage of the content which is very useful for the research activities. The content prepared by over three lakhs which can be downloaded by authorized users and the usage of these resources is monitored by eminent institutions like IITs, NITs, IIS etc to seek the information seeking behavior of the users and what can be do so that the user effectively served to meet their information requirements.

e-SODHSINDHU

This project is aimed at providing quality information to the researchers so that quality research work is carried out. Three independent bodies NLIST, INDEST, INFONET which are promoted by various statutory bodies had come together to form this project which is strengthened to retrieve the information from the current and archival data from peer reviewed and other journals which will be very useful for research activities and at the sametime get an idea of the activities undertaken in various domains. The higher education institutions can become members of this project and access the data both from the institution as well as remote location. During this pandemic situation several resources are made freely available to the users so that no disruption in the research activities. The major motive of this project is to enhance the availability of e-resources for higher education institutions through the development of unique collection of e-resources such as e-journals, e-books, e-conference proceedings etc. All the steps are aimed at moving towards digital information which forms the basis for rich knowledge society.

Steps are initiated to make proper awareness among the researchers about the availability of plagiarism software and the impact if there is any breach in the levels of permissible

plagiarism levels. Plagiarism Detection Softwares are developed and made available to the prominent higher education institutions so that there is quality research work is being carried out by the scholars and academicians.

In addition to these initiatives for the higher education institutions as part of the usage of the ICT modes, there are other initiatives which are aimed at bringing out quality research activities which can be beneficial to the society. One such initiative is *ERP-Samarth* where Enterprise Resource Planning solutions are developed for the higher education institutions which can be used during the student admission and faculty recruitment. As it is known that the process of faculty recruitment is cumbersome as the contributions made by the faculty is into various modes like article publication, book chapters, conference papers, workshops attended, book publications, projects undertaken, consultancy services rendered etc which need to be recorded and verified. This software provides a suitable solution to this where quality is prioritized ahead of the quantity. Other initiative is *Indian Research Information Network System acronym as IRINS* is aimed at enabling the showcasing of the research activities to the peer group in that particular domain area. It integrates the project grant system, course management, scholarly publishers, citation system which are inturn integrated with Scopus Id, Research Id, ORCID Id etc. This project is aimed at identifying the possible gaps in a particular area which can probe with quality research work.

The following table depicts the comparative features of the various ICT tools that are being used in the higher education institutions. Some of the tools which were discussed in the previous sections are being highlighted so that their differentiation among themselves can be understand and evaluated.

Table 1: Comparative features of various ICT Tools used in Higher Education Institutions

|   Factors Portals | SWAYAM | FOSSEE | e-Yantra | Virtual Labs | SWAYAM Prabha | NDLI | e-SodhSindhu |
|---|---------------------|------------|----------------------|-------------------|---------------------|------|--------------|
| Credit Transfer | Yes | Yes | No | No | No | No | No |
| Passing Certificate | Yes | Yes | No | No | No | No | No |
| Exam Fee | Yes | Yes | No | No | No | No | No |
| Mobile App | Yes | Yes | No | No | Yes | No | No |
| Support to other Competitive Exam | Yes | Yes | No | No | Yes | No | No |
| Accessibility to DTH | No | Yes | No | No | Yes | No | No |
| Flexibility of anytime | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Mentors | Yes | Yes | No | No | Yes | No | No |
| Discipline Support | All | All | Science / Engg | Science / Engg | All | All | All |
| Education level (Secondary / UG / PG) | School / UG / PG | UG / PG | No | No | School / UG / PG | No | No |
| Audience | All | All | All | All | All | All | All |
| Accessibility for Foreigners | Available | No | Yes, within India | No | No | No | No |

Despite the efforts made by the higher education institutions, the virtual classrooms along with the usage of ICT tools are not fully emerging as a complete alternative to the classroom education. Certain steps need to be undertaken such as the effective integration of other functionalities like number of permitted users in the session, coverage of larger distances etc so that a comprehensive virtual classroom can be created. There is need to have integration of the assessment modules within tools will make the work of the teachers more easy. Within the integration of the assessment tools such as the class test, quizzes, provision for mathematical formulas / equations, computer programming interfaces etc if incorporated will yield better results for the higher education. In order to encourage the quality research activities and also to check the quality of the class assignments undertaken, there is need to have the incorporation of anti-plagiarism tools to ensure that quality work is being undertaken by the participants and learners. There is also need for the integration of augmented virtual reality in the classroom teaching as these will make the learners more inclined to the concept and have better understanding rather than depending on memorizing the concepts rather than getting the basic concept of the subject.

An attempt is made to understand the SWOT analysis of the various ICT platforms that are being recommended by the statutory bodies for their effective utilization in higher education institutions.

STRENGTHS

- These platforms have larger reach interms of the users.
- These platforms permit the users to have the access of the content as per their convenience.
- Recording of the classes is possible where these can be used for further references.
- With these flexible tools, the teachers can change the pedagogy of the classroom teaching.
- In the present day pandemic situation, social distancing can be maintained.

WEAKNESS

- Continuous and rigorous teaching needs to be conducted for the teachers who are using these tools.
- There is need to have uninterrupted internet connectivity.

- There is need to procure additional infrastructure to run these virtual classroom tools.
- Emotional connectivity between the teachers and learners would be missing.
- Lack of understanding and familiarity of these virtual classroom tools among the teachers.
- Lack of expertise among the teachers in recording the classes, editing them so that they can post for future references by the learners.

OPPORTUNITIES

- There is chance to introduce augmented reality in the class delivery mechanism.
- Can make use of the audio and video modes which can impress the students and learn the concepts at a faster pace.
- There are chances of introducing new technologies like Artificial Intelligence, Machine Learning, Big Data Analysis etc to enhance the learning experience of the students.

THREATS

- There are changes that senior faculty may be reluctant to adopt themselves to the new environment as they are not used to these new technologies.
- There are chances that the qualifications of the academic degree obtained through virtual mode may not considered by the industry and even the academic institutions during their recruitment and promotions.
- The inadequate availability of the essential resources of virtual classroom environment may dampen the spirit.
- The diversity that exists among the various areas within the country may also hinder the progress of the initiative undertaken.
- Availability of various resources on the internet may make the users move from one platform to another disturbing the schedules prepared by these online classroom environments.

CONCLUSION

The prevailing pandemic situation has forced the regular physical classroom activities to a standstill. This resulted in disturbing the academic calendar of the higher education institutions and also the plans of several students who intend to have their higher education, recruitment activities etc. To solve few of the issues raised due to the sudden lockdown of the academic activities, ICT tools were being used to cater to the academic requirements of both

the teachers and learners. These are being used to ensure that the academic activities are going on and possible all the scheduled academic activities are completed to the best possible extent. The availability of several audio, video, textual components of several subjects ranging from school to post graduation had enabled the learners to continue their education and at the sametime maintain the pandemic prerequisites like social distancing etc. The e-resources that are developed should be mapped as per the requirements of the learners otherwise all the efforts undertaken would be void. The government policies should rework so that the outcomes of the usage of these online platforms are quantified and enhance the functioning of the higher education institutions. Also there is need to obtain continuous feedback from the users of these tools so that the necessary changes can be amended for the betterment of the learners.

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