Effectiveness of E-learning in Higher Educational Institutions During Covid-19 Pandemic at Andhra Pradesh, India

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Abstract:- **In the year of 2020, covid-19 (corona virus) disease was spread all over the world and it declared as pandemic by the World Health Organisation (WHO). Internationally, more countries implemented many control measures like social segregations, lockdown and temporary suspension of schools. In this situation most of the schools, colleges and universities started to implement E-learning system globally. In this study, it aimed to investigate and explore the effectiveness of E-learning though assessing the challenges and issues of online learning during covid-19 pandemic between the students who studying in universities and colleges in Andhra Pradesh, India. The data has been collected through online survey from 300 students randomly who studying in universities and colleges. The collected data has been analyzed by using IBM SPSS Statics version-23 for frequency distribution and to test the level of significance among the variables. The ANOVA and coefficient of correlation with standard deviation test has been used for the analysis. The result of this study was distributed with frequency distribution graph and table of testing significance of variables. The online learning platforms, challenges and benefits are the important factors for the analysis. The result showed that, most of the students are ready to attend E-learning during covid-19 pandemic. The survey showed that most of the students moderately satisfied with the E-learning system. The majority of the respondents are used plat form for E-learning is whatSapp, because it is the familiar app that used send and receives homework and assignments at home. The quality of E-learning depends upon the teaching methodology, collaborative learning, innovative and motivated teaching and engaging the students actively during E-learning process. Teaching faculties should motivate their students to keep them engaged and active during the online learning process. Finally, this work concluded that implementation of E-learning system during the covid-19 pandemic is effective and useful for the students to improve their knowledge and skills in higher education sectors.**

Keywords: E-Learning, Covid-19, Effectiveness, Challenges, Benefits, Higher Education.

I. INTRODUCTION

Education is the most crucial one in the civilization of human life. The all inventories and innovations of human life have begun with the term education. The term education means the things and events a person learned by being taught well. The educational system is adopted by all countries are traditional process only. Since the corona virus pneumonic infection started in china and its spreads rapidly in all over the country, that affect the economic development of each and every country. Further it influences the educational sectors and fully stopped the traditional education system from 2020 to till date. In this pandemic situation, all educational sectors rapidly moved to E-learning system. The E-learning is the system of sharing the skills and knowledge through various digitalized channels like internet, computer, E-book and through mobile phones. Similarly, (Maatuk, Elberkawi, Aljawarneh, Rashaideh, & Alharbi, 2021) stated in the study, the overcome the unpredictable situation of covid-19 pandemic, the educational sectors are switched to E-learning process. Through this process, the students and faculties are faced many challenges and issues during the online learning especially in the developing countries (Radha, Mahalakshmi, Kumar, & Saravanakumar, 2020). Sharing of knowledge and skills through electronic and internet resources is E-learning. Information communication technology (ICT) has the crucial part in the E-learning system. The use of ICT will promote the effective online learning process in the educational system and it creates emerging trend of E-learning in the educational environment. Digital learning, internet-based learning, web-based learning, electronic based learning is the types of E-learning (Hoq, 2020). The survey conducted by All India Survey for Higher Education (AISHE) in the year of 2019-20, there are nearly 993 universities and 39941 colleges in India. The crisis of corona virus not only affected the health of the people and also it affects social, economic and educational sectors globally. The students faced many problems during covid-19 pandemic led to closure of school, colleges and universities in all over the world. To prevent the lack of learning during pandemic, majority of university and colleges started E-learning process between students (Adeoye, Adanikin, & Adanikin, 2020).

II. REVIEW OF LITERATURE

1. Online learning during COVID-19 pandemic

Nowadays educational institutions are moved to online teaching due to COVID 19 pandemic. Globally, more than 1.2 billion students in 186 countries were affected by educational institution closed due to pandemic on March 12 2020 onwards. In the similar way,(Muthuprasad, Aiswarya, Aditya, & Jha, 2021) deliberated that effectiveness of online learning, design, strategies and preparedness is still not clear in many developing countries like India. This study aimed to analyse the perception and preferences of online learning of students in the pandemic period. The study explores the preference of students on online learning attributes and its implication of online learning between the students. The result stated that majority of the students are ready to attend online classes during the pandemic period. The learning skill of the students were analysed by testing hypothesis, the result shows positive significant in the study. Moreover, (Coman, Țiru, Meseșan-Schmitz, Stanciu, & Bularca, 2020) reviewed on students perception regarding online teaching and learning, capacity to gather knowledge and use of e learning during the pandemic. Online survey has been conducted to 762 students through structured questionnaire in Romanian university. The result of the study revealed that in Romania the effectiveness and benefits of online learning is low impact between the students. The disadvantages are more in e-learning in Romanian institutions. Similarly, (Edy, 2020) stated the t implementation of online teaching and learning activities using several medias like Google zoom, WebEx and Google meet. It is necessary to continue the learning through online due to the covid-19 pandemic period. In this study project-based learning skill has been analysed between the students to increase the innovations and creativity in online learning. The result showed that there are more implications and improvements in student learning outcomes in the COVID 19 pandemic periods.

Figure 1: E-learning platforms, (source: (Edy, 2020))

2. E-learning in higher studies

In the college level educational institutions are implemented online learning due to COVID 19 pandemic in all over the world. E-learning is the process of teaching and learning through the use of ICT (Information and Communication Technology). Likely, (Demuyakor, 2020) suggested the online learning platform and level of satisfaction in students perception higher education level in china. This study conducted an online survey to investigate the satisfaction level of online learning at selected intuitions

in china. The findings suggested that implementation of online teaching and learning is the great thing for the students to continue their studies in the pandemic period. The some issues in online learning are poor network connection, cost of buying mobiles, laptops and internets and other disruptions. Furthermore, (Bahasoan, Ayuandiani, Mukhram, & Rahmat, 2020) aimed to determine the effectiveness of online learning during COVID 19 pandemic. It is an empirical and quantitative study that collected data through online with simple random sampling method. The targeted populations are management students in university of west Sulawesi. The study concluded that online learning is effective and inefficient, because the cost of online learning is higher than offline learning process.
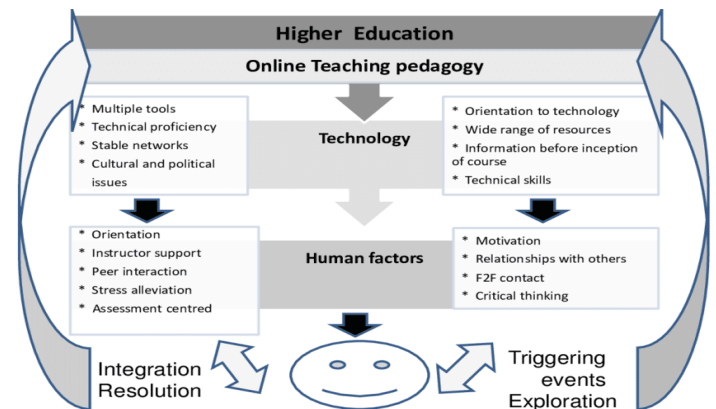

Figure 2: online learning process in higher education

The covid-19 pandemic has been the major issue and key factor for implemented online teaching and learning process in globally. Most of the higher educational institutions are moved to E-learning to sustain their educational institutions in the environment. It is the only learning way for the students during the covid-10 pandemic period. Subsequently, (Agormedah, Henaku, Ayite, & Ansah, 2020) explored the study on student's responses to online teaching and learning in higher education. The data has been collected from 467 students through online survey with structured questionnaire. The study suggested that positive response for online teaching during the COVID 19 pandemic. However, it concluded that the online teaching had two positive and negative effects because the students lacked in training and poor internet connection.

3. Effectiveness and benefits of E-learning

The covid-19 pandemic has been disrupted the educational sectors globally in all universities and colleges. Thus all educational institutes shifted their traditional educational system to online learning system. It has been created major challenges for the higher education communities. Similarly, (Abdulkareem & Eidan, 2020) reviewed on the challenges faced by higher education sectors globally during the covid-19 pandemic and how the online learning with related techniques, implications and platforms were supporting for effective online teaching. The challenges, benefits and disadvantages of applying new technologies for online teaching and overcoming disadvantages were discussed in this study. Moreover, (Igbokwe, Okeke-James, Anyanwu, & Eli-Chukwu, 2020)

investigated on managing the challenges to the effective utilisation of E-learning during covid-19 pandemic. The benefits of online learning is enhancement of knowledge, easy communication, reduced physical contact of participants, accommodating the needs of an individual learner, provides safe environment, provides opportunity to learn anytime at anywhere, cost effectiveness, diverse teaching methodology and encouragement of innovation in teaching. Likely, (Subedi, Nayaju, Subedi, Shah, & Shah, 2020) deliberated the impact of E-learning during covid-19 pandemic period among nursing students and teachers in Nepal. The E-learning is playing an important role in very country due to covid-19 pandemic, but in the developing countries like Nepal several challenges are exist. Socio-economic, technological and literacy background of family is the major challenges of online learning in Nepal. By considering these challenges, the researcher aimed to assess the impact of online learning during the pandemic among teachers and nursing students in Nepal. The result showed that majority of the respondents is suffered from poor electricity and internet connection during the online classes. The study concluded that E-learning is necessary for continuing the education during pandemic period but it is necessary to overcome the challenges of E-learning in the developed countries(Sandars, 2021).
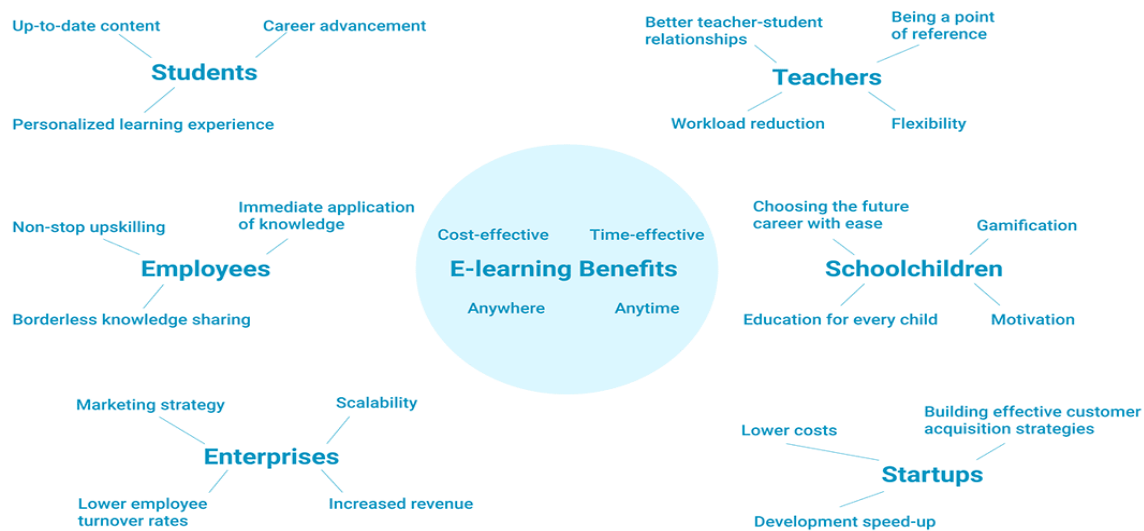

Figure 3: benefits of E-learning, (internet source)

4. Challenges of E-learning

Implementation of online learning among the students is a challenging issue for several universities and institutions in developed and developing countries. The major challenges of E-learning system are poor network connection and many of the students not willing to attend online learning. Accordingly, (Almaiah, Al-Khasawneh, & Althunibat, 2020) has indicated the challenges of E-learning system has categorised into four parts such as, individual challenges, technological challenges, course challenges and cultural challenges. But these challenges are varies from one country to another country depends upon the livingness, economic conditions, culture and other factors. The lack of utilising ICT knowledge, weakness of teaching through online, poor network connection is the major challenges of developing countries. Furthermore, (Vershitskaya, Mikhaylova, Gilmanshina, Dorozhkin, & Epaneshnikov, 2020) aimed to evaluate the readiness of educational institutions and students for online learning. The main objective of the study is to identify the problems and issues of ICT (information communication and technology) in educational system while introducing E-learning. The survey has been conducted through online among the first year IT students of three universities implemented the e-learning system. The result showed that there are some issues and challenges in E-learning like poor service strategies, poor marketing strategies and insufficient technical support. It is revealed that most of the students they independently developed applications for online learning (Aboagye, Yawson, & Appiah, 2021). The study finally concluded with the major challenges of E-learning; inadequate ICT and online learning infrastructure, lack of affordable and adequate internet bandwidth, financial constraints, lack of online learning policies, lack of interest and commitment among the teaching faculties to use online learning, lack of technical content development and poor network connection issues during online classes. Similarly, (Mahyoob, 2020) investigated the challenges and obstacles of E-learning between the English Language Learners (EFL) in arts and science colleges, Saudi Arabia. The major contribution of the study is to evaluate the learners experience through online learning and the challenges faced during E-learning. It is found from the study the major issue of online learning during covid-19 pandemic is academic, technical and communication challenges. The study concluded that most of the EFL learners are not willing in online teaching, they couldn't fulfil their learning progress compare to traditional method of teaching (Aboagye et al., 2021).

III. RESEARCH GAP

In this section describes the various limitation of existing research work done in online learning during covid-19 pandemic. Accordingly, (Radha et al., 2020) was failed to analyses the challenges and issues of E-learning. The data has been gathered from student's view only, it is necessary to analyse the effectiveness of E-learning between faculties and students also. Consequently, (Coman et al., 2020) has conducted the study only in two universities and the sample was non-probabilistic, thus the result can not applicable for the entire educational system in the country. Some limitations should be improved to implement effective E-learning during the pandemic period currently and future. Our study is proposed to overcome the limitations from the existing studies and to find out the issues and challenges of online learning during the pandemic period and to provide suggestions for future implications.

IV. RESEARCH QUESTIONS

1. What is the perception of higher education students about E-learning during covid-19 pandemic in colleges?
2. How effective the online learning for students during covid-19 pandemic?
3. What are the challenges of online learning and what are the implications to overcome the challenges?
4. How to make online classes more innovative, motivated and engaged during online learning?
5. Does the student in rural areas will get proper internet connection during E-learning?
6. Do the recent applications of E-learning platforms will beneficiary for the students?
7. What are the problems the students often encounter during online learning?

V. RESEARCH OBJECTIVES

1. Primary objective:
- To analyze the effectiveness of online teaching and learning in higher educational institutions during covid-19 pandemic at Andhra Pradesh, India.

2. Specific objectives:
- To identify the challenges and issues of E-learning and provide further implications for improve effectiveness of online learning during covid-19 pandemic in higher education sectors at Andhra Pradesh.
- To implement innovative teaching skills during online learning for engage the students more attentive in online classes.
- To explore the sudden transmission of universities and educational institutions to E-learning system.
- To find out the problems faced by students during online learning and provide further suggestions.

VI. SIGNIFICANCE OF STUDY

This study will help to find out the effectiveness and student's attitudes towards online learning during covid-19 pandemic. This research work has been proposed to analyse the students who are studying in several universities and colleges in Andhra Pradesh, India. It is important to study the challenges and issues of E-learning in developing countries to provide further suggestions to implement effective online learning in higher education sectors during the pandemic period. It is the emerging trend of learning paradigm in education sectors to engage the students through digital learning.

VII. METHODOLOGY

1. *Research design*

This study is descriptive and quantitative in nature. The data has been collected randomly from the respondents for the primary data analysis. The secondary data has been collected through articles, magazines and other internet sources.

2. Participants

The targeted population for the study has been selected simple random method basis from randomly selected 300 students in 5 universities and colleges at Andhra Pradesh, India. From the participants' majority of the respondents are female (63%) and other remaining are men (37%).
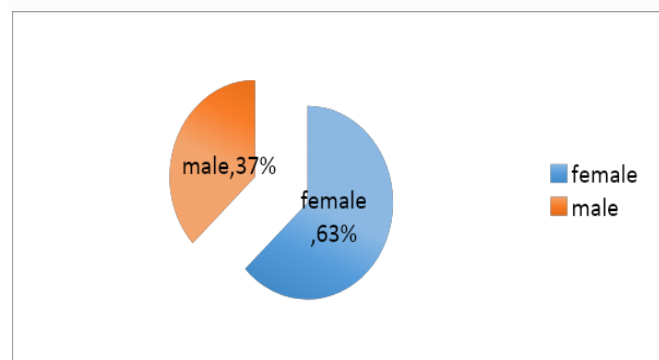
3. Data collection method

The data has been collected through online survey by using Facebook, what Sapp, email and Insta-gram with structured questionnaire from 300 respondents who studying universities and colleges in Andhra Pradesh. The average time duration for answering the questions is 10 minutes through online.

4. Research instrument

To collect data, a structured questionnaire has been used. The questionnaire includes major two parts, the demographic questions and research based questions. In the demographic question, the gender, age, marital status, educational qualification, studying institution and family background were included. And for the research based questions 3 point liker scale and 5 point liker scale questions were included to analyze the effectiveness of online learning during covid-19 pandemic.

5. Data analysis

The collected data has been analyzed by using IBM SPSS Statics version of 23 for frequency distribution and to test the level of significance among the variables. The

ANOVA and coefficient of correlation with standard deviation test has been used for the analysis.

VIII. RESULT AND DISCUSSION

The result of this study was distributed with frequency distribution graph and table of testing significance of variables. The online learning platforms, challenges and benefits are the important factors for the analysis. Willingness towards E-learning, satisfaction level, technical issues of E-learning, knowledge and skill improvement level through E-learning and usefulness of E-learning during the covid-19 pandemic were analyzed in the result and discussion section.

1. Frequency distribution analysis

Table 1: online learning platforms

Online learning platform	frequency	percentage
what Sapp	105	35%
Google classroom	65	22%
Google meet	40	13%
Email	28	9%
Zoom meet	62	21%
Total	**300**	**100%**

The below figure analyses the usage of online learning platforms for attending online classes in the covid-19 pandemic period. Majority of the universities and colleges were used what Sapp for send and receive assignments and home works. 35% of the respondents are used what Sapp is the platform for conducting online classes for the students. 22% of the respondents are using Google classroom, 21% are zoom meet an the lowest percentage of the respondents are using e-mail (9%) as the E-learning platform. The percentage level of online learning platform has been shown in the below figure.
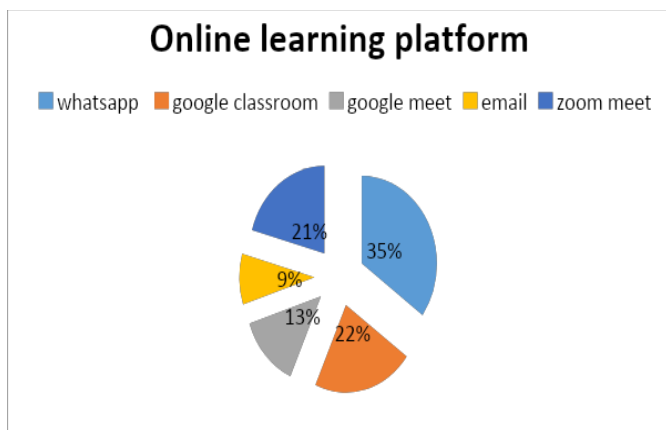

Figure 4: online learning platforms

In the below figure-4, the challenges of E-learning were analyzed from 300 respondents who studying in universities and colleges in Andhra Pradesh. The majority of the respondents (110) in per cent 37% were faced poor internet connection during the online classes. 23 % of the respondents were struggled with slow working of internet.

18% of the respondent's stated that there are no lab sessions and experiment based learning to improve the learning skills. The lowest percentage of the respondents (7%) is stated that there are no issues and challenges in the online learning system.
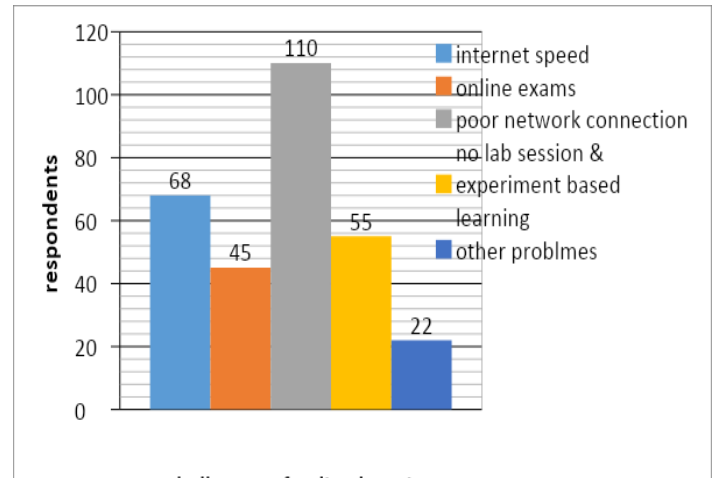

Figure 5: challenges of online learning

The below figure-5 analysis represented the willingness of students on online learning during the covid-19 pandemic. Out of 300 respondents, the majority of the respondents (238) stated positive responds to the question that showed that 79 % of the respondents are willing to attend online classes in the pandemic period and the remaining 21% of the respondents are not willing to attend online classes during the covid-19 pandemic period.
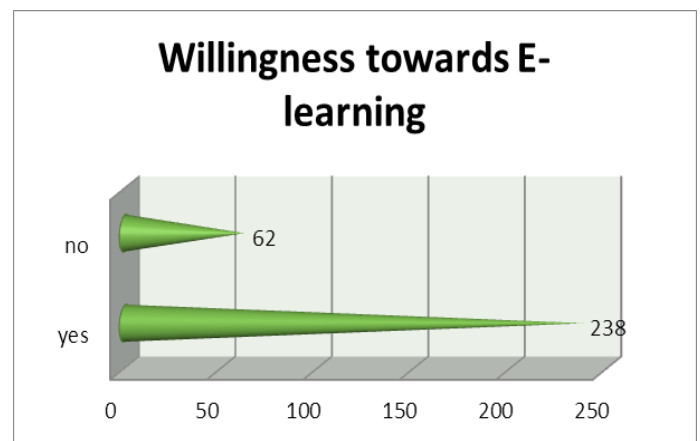

Figure 6: willingness towards online learning

Below figure shows the satisfaction level of students towards online learning in universities and colleges. The majority of the respondents (49%) stated the moderate level of satisfaction towards online learning. 32% of the respondents have high level of satisfaction on E-learning and 19% of the respondents are stated low level of satisfaction towards online learning during the covid-19 pandemic in universities and engineering colleges in Andhra Pradesh.
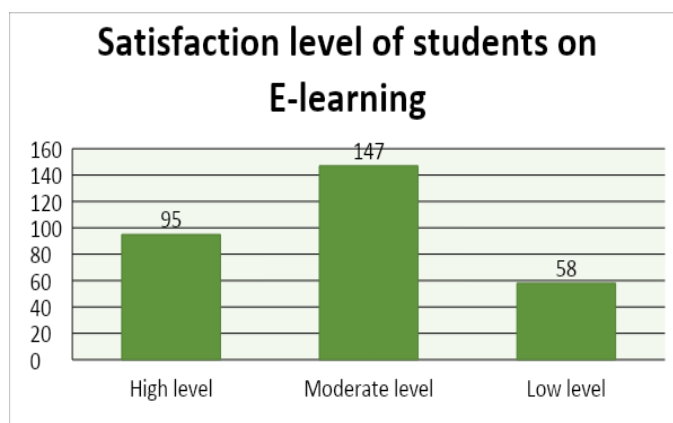
Figure 7: satisfaction level of students on E-learning

2. Testing of significance

Table 2: Statistical descriptive analysis of variables

variables	mean	Standard deviation	Correlation Coefficient	kurtosis	skewness
E-learning platform	.092	.458	1.044	.507	0.452
Challenges of E-learning	1.30	.651	1.227	-.236	1.32
Willingness on E-learning	.154	1.76	1.041	.237	.087
Satisfaction level of E-learning	.189	.907	1.117	-.283	-.543
Improvement of student's skill and knowledge through E-learning	.170	1.30	1.303	.768	0.32
Technical issues of E-learning	.181	.770	-.283	-1.29	1.09
Comparison of traditional learning and E-learning	.087	.852	.699	-.509	-.874

From the descriptive statistical table analysis, it is showed that the significant value of the variables is similarly correlated with one and another. The highest mean value for the above variable is 1.3, which stated that the challenges of E-learning are highly significant compare to other variables. The highest standard deviation value is 1.76, which is more than p value 0.05; it stated that the willingness of students for online learning shows positive significance in the analysis. The significant value for the above table analysis has positive and negative value; it shows that the online learning has both positive and negative influences among the students.

Table 3: H1: relationship between traditional learning and E-learning

One-way ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.111	1	.056	.249	.782
Within Groups	4.929	299	.224		
Total	5.040	300			

The significant p value is .782, which is more than p value 0.05. Hence the alternate hypothesis is rejected and the null hypothesis is accepted. It shows the negative impact on the variables. Finally, it stated that there is no significant relationship between the traditional learning system and E-learning system.

IX. DISCUSSION

Due to the covid-19 pandemic, the education sectors rapidly moved to digitalization and adapted to online learning system with a short period of time. The E-learning process has both negative and positive influence on educational system. It is beneficiary for the students in the covid-19 pandemic period but it does not work for the long term process. The existing studies revealed that online learning gives benefits for the students during the covid-19 pandemic period as the complementary tool for traditional learning system. Moreover, (Gohiya & Gohiya, 2020) stated that students had the positive attitudes towards E-learning still they encountered some technical issues. It is useful for the pandemic period to continue their studies at home. Similarly, (Mseleku, 2020) deliberated the effectiveness of E-learning during covid-19 pandemic and explored the benefits and challenges of E-learning. The face to face interaction is missed during online learning and it should solve to become effective E-learning between the students. It is important to adopt and motivated ourselves to learn digitally to overcome the covid-19 pandemic influence on educational sectors (Azlan et al., 2020).

In the similar way, the above result stated that, most of the students are ready to attend E-learning during covid-19 pandemic. The survey showed that most of the students moderately satisfied with the E-learning system. The majority of the respondents are used plat form for E-learning

is what Sapp, because it is the familiar app that used send and receives homework and assignments at home. The quality of E-learning depends upon the teaching methodology, collaborative learning, innovative and motivated teaching and engaging the students actively during E-learning process (Aboagye et al., 2021). Teaching faculties should motivate their students to keep them engaged and active during the online learning process. The appreciation and recognition to encourage themself should be given to every student during the online learning process (Saxena, Baber, & Kumar, 2021) &(Igbokwe et al., 2020). These implementations will increase the attendance ratio, increase their interest and doubts for better outcomes during the E-learning process. furthermore, (Pustika, 2020) reveled that it is necessary to overcome the challenges and issues of E-learning during covid-19 pandemic to continue the learning and skill of higher education students. Teachers need to innovate and motivate the students through effective teaching during the E-learning process in the pandemic situation (Pal & Vanijja, 2020)& (Ananga, 2020).

X. CONCLUSION

The study aimed to investigate and explore the effectiveness of E-learning though assessing the challenges and issues of online learning during covid-19 pandemic between the students who studying in universities and colleges in Andhra Pradesh. However, it is difficult to evaluate the motivation and activation of students during E-learning due to lack of direct contact between the teaching faculties and students. For the result sections the ANOVA, standard deviation, correlation, kurtosis, skewness, frequency table and graph are used for the analysis. The result and findings suggested that, most of the students they are willing to adopt E-learning system and they are satisfied with the system during the covid-19 pandemic. It is necessary to overcome the challenges and issues faced by the students during online learning especially the poor network connection and other technical issues. The teaching faculties should innovate their teaching strategies and methodology to engage the students more active during the E-learning process. Finally, concluded that implementation of E-learning system during the covid-19 pandemic is effective and useful for the students to improve their knowledge and skills in higher education sectors.

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