International Journal of Humanities and Social Science Invention (IJHSSI)
ISSN (Online): 2319 – 7722, ISSN (Print): 2319 – 7714
www.ijhssi.org ||Volume 9 Issue 6 Ser. V || June 2020 || PP 09-18

An Analytical Study On The Role Of E-Learning In Research Field- Prospects And Vision

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Abstract -
Purpose- *Presently we are fully dependent on technology. It is a powerful weapon for changing society. Information communication technology plays a great role in improving the quality of higher education.Quality of higher education can be categorized under three heads.Technology, economic & pedagogical. It means that the quality is evaluated which is based on course work & predefined learning outcomes. But now this trend has changed in the 21st Century due to introduced of eLearning. In the modern trends ICT (Information Communication Technology) era of E-learning plays a very prime role in the present scenario of the whole educational system, even for an individual & as well as for the future of a nation.*
Methods- *The study is based on Quantitative & Qualitative Research. The focus on the study mainly depends on the various outlooks of e- research. For the data collection primary techniques of the questionnaire, interview was conducted and taken help from the secnondary sources like journals, books, websites.*
Conclusion- *The use of ICT makes the management process more effective. Therefore, it can be said, nothing is impossible in this 21st century to reach out by accessing the emerging trends of technology. The concerned study mainly depends on the various outlooks of the research- oriented e-learning.*
Key Words
E-learning, ICT (Information Communication Technology), ERT (E- research technology), Emerging trends.

Date of Submission: 14-06-2020 Date of Acceptance: 30-06-2020

I. INTRODUCTION

Presently we are fully dependent on technology. It is a powerful weapon for changing society. Information communication technology plays a great role in improving the quality of higher education.Quality of higher education can be categorized under three heads.Technology, economic & pedagogical. The technological trends of e-learning are enormously spreading at a very rapid pace. The emerging trends of eLearning or electronic learning is the type of learning carried out, assisted or supported by electronic gadgets, media, or resources. The modern trend of e-learning may call for the service of the promoting electronic & communication media like CD-Roms, DVD, teleconferencing, video-conferencing, computer-based networking conferencing, electronic mail, surfing through the internet & web browsing, gamification, eLibraries, program learning, stimulation customized learning, SWAYAM (Study Webs of Active–Learning for Young Aspiring Minds), MOOC(Massive open online courses), World Wide Web/ Web2.0, etc. According to Rosenberge (2001), "e- learning refers to the internet technologies to deliver a broad array of solutions to enhance knowledge & performance." eLearning is cost-effective as compared to traditional forms of learning, because learning through this mode happens quickly and easily.A lot of training time is reduced with respect to trainers and course materials.

Nature of eLearning

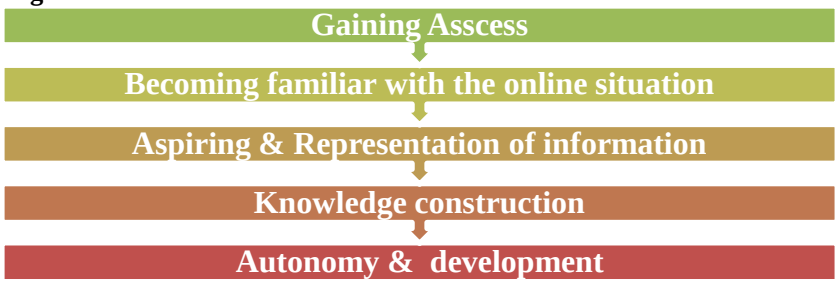
- eLearning refers to computer intensified learning
- It is a online learning carry out through the internet or web authorized technology.
- It should be taken as a multimedia technology for distance education programs rests heavily on the use of internet & web service provided through the computerized, yet these are not interchangeable but harmonized.
- eLearning conducts a comprehensive meaning to compare the terms of CBT (Computer Based Teaching) & CAI (Computer Aided/Assisted Instruction).

II. STATEMENT OF THE PROBLEM

eLearning

eLearning is a muscular tool for executing strategy for teaching, research, serving the society, the contribution of the institutional level as well as faculty & students. eLearning is defined as a web-based learning that intricates the integration of the Internet & Learning. The entire computer-based technology like assisted & managed instruction (CBT, CAT, CMT), integrated learning systems, multimedia, interactive video, virtual reality, Artificial Intelligence , used for learning and instruction are all eLearning. Testle (2005) said, eLearning is the delivery of training & learning through electronic media. eLearning is a part of an education system that incorporates self- motivation, communication, efficiency & technology.

Model of eLearning



Emerging Trends of eLearning

The emerging trends of eLearning could provide faster learning at reduced costs, increased access to learning, and clear accountability for all participants in the learning process. It helps people to get access to a world-class learning experience. In this competitive world, daily new trends are being surfaced to impact a good learning technique for the learner. Among the admired technological trends of eLearning, some are :

- **Mobile Learning**

Mobile learning is the ability of an individual to procure or allocate educational content on personal pocket devices, such as PDAs, smartphones, etc. Mobile is considered as the easy way platform for eLearning because of

✓ It has the probable to reach masses
✓ Carried all the time
✓ Easy to access
✓ Just in time learning.

- **Gamification**

This type of modern trend in eLearning is through games & it depends on the program & the audience's desires. The beneficial of gamification are

✓ Better learning experience
✓ Help to recall for a long time
✓ Instantaneous estimation

- **Internet Of Things (IoT)**

It refers to the network of physical things or objects around which hold IP (Internet Protocol) address for internet connectivity & the communication that occurs between these connected objects & other internet-enabled devices & systems. The major welfare of the IoT in case of eLearning is

✓ The learner is part of the learning system as an entity
✓ Continuous tracking a learner by the system
✓ Continuous updates to learners.

- **Cloud-Based eLearning**

This type of eLearning creates waves in the field of education & business. These learning systems are hosted on the internet & easily accessed by logging into a service provider's site, rather than installing all the software & course on the user's computer. The instructional designer will simply use their internet browsers to upload courses content & communicate with the learners directly. The advantage of these eLearning is

✓ Faster development
✓ Easier to maintain
✓ The learner-oriented service
✓ Cost predictability
✓ More storage space

- **Video eLearning**

This type of eLearning provides a rapid idea & helps students to understand the ideas with multimedia effects. It is used for mainly:-

- ✓ Motion explanation
- ✓ More suitable & essential information to reach shortly
- ✓ Both Visual & auditory organs are activated at the same time

- **Beacon eLearning**

Beacon e-learning wireless device that transmits signals or other near devices beyond the Bluetooth connections. This is used as an Indoor Positioning System (IPS). These newly technological advantages are

- ✓ Better accessibility
- ✓ Powerful communication
- ✓ Increase intellectual innovation
- ✓ Modify the classroom experiences.

- **Artificial Intelligence**

The involvement of artificial intelligence in eLearning helps the learner to take very enlightened decisions & quality resources. The major contribution of the AI in case of eLearning is

- ✓ AI is an intelligent software to designed the intelligent actions reading entire environment
- ✓ Automated teaching
- ✓ Rich information

- **Social Learning**

Social learning is a learning of direct & indirect contact. Direct means face to face contact & indirect refers to an interaction between social media. Social learning creates a learning framework that share, collaborate, & exchange idea through network devices. Thus, social learning refers to a change in understanding that goes beyond the individual to become situated within social units through social interaction between individual & social networks. Incorporate tools, like Web2.0, social networking sites, blogs, chats, video conferencing, etc.

- **Massive Open Online Courses (MOOC)**

MOOC is an online educational tool that is open access via the web. MOOCs provide interactive user forum to support community interactions among students & professors. This program recently introduces research development in distance education. 2008 it was 1st introduced & emerged as a popular mode of learning in 2012.

- **ePublication**

ePublication refers to electronic publication, whereas the manuscripts are published in the electronic format, edited, printed as well as distributed to the reader in a computerized form.

Information Communication Technology (ICT)

An amalgamation of three words, i.e. 'information- refers to knowledge, 'communication' refers to communicate & 'technology' means - the use of a computer. It can be defined as "the integration of computing, networking & information processing technologies & their applications." People can communicate, create, disseminate, store and manage information with the help of technological tools and resources of Informationn Communication Technology. Thus, ICT implies the technology, which consists of electronic devices & interactive materials that permits the user to experience a wide range of learning process.

- **ERT (E- Research Technology)**

The application of ICT is of immense importance & powerful in the function of research. Now a day it helps the researcher to search the ten databases & electronic resources, more specialized searching, link to an individual database, & select favorite resources & eJournals. One more prime dimension of ICT in research is the use of an online databases, online research libraries/ virtual libraries, which are the direct outcome of network & technology. These tools provide the researcher an online contents of books, research papers, reports & peer- reviewed articles in e-journals. Some applications of ICT in research are

- Online repositories are the systems that enable the storage, discovery & retrieval of e-materials, stored at a local level. LOR (Learning Online Repositories) are the systems that manage to share e- learning content. The material distribution & sharing circle's model categorizes are of 3 types. 1st are Local repositories, these repositories are established to serve local communities. 2nd are Portals that allow to several online repositories, such a MAOR. MERLOT. 3rd are International Associations & Consortiums that enable the sharing, learning materials among the network worldwide.
- Online libraries are popularly viewed as an e-version of a library where storage is a digital format, allowing direct communication to obtain material. It helps the researchers to access the libraries through the web-OPACs (Online Public Access Catalogues) & circulation services through the library's website. Access the online database, full e-text journals & e-books.

- Online assessment tools that are used in various research purposes, like Gamifying the answer, it's the most popular tool for digital assessment. "Socrative" a software, allows instructors to observe their learners progress through feedback and evaluate their responses immediately. That is to get instant feedback from students. Tracking Progress Plicker- it's an effective software for using data assessment. The online survey, Mail questionnaire, these are digital assessment tools that serve the different purposes of research fields.

III. REVIEW OF LITERATURE

Chikkamanju & Kumar (2015)1 studied showed that the most of the undergraduate college libraries are suffering from inadequate funding, manpower, proper infrastructure facilities, audio & visual materials, as well as e-resources, and trained manpower to handle the digital library operations. The majority of the college libraries in the study have not computerized their library services. Most of the unaided colleges do not have Internet facilities and accessing the N-List services.

Charles R. Grahame et.al (2013) in a Journal of Internet and Higher Education, wrote an article titled "An Analysis of Research Trends in Dissertations and Theses Studying Blended Learning" and examined the literature related to learning effectiveness, learner satisfaction, faculty satisfaction, access and flexibility, and cost-effectiveness. They identified the need for more theoretically grounded research and outlined opportunities for research exploring the link between satisfaction data and specific blended learning methods, accessibility, opportunity costs, cost-effectiveness, and psycho-social relationships. This study identified the top 50 articles, 25 edited book chapters, 10 books, and 15 non-academic publications ranked by citation count. These works indicate where the conversations on blended learning research are taking place. Researchers found that students participating in blended instruction produced stronger learning outcomes than those participating only in face-to-face instruction.

Khan and Ahmad (2009) revealed that most of the research scholars are aware of the availability of e-journals and largely use them for reference purposes in their research work. They fully agree that with the usage of e-journal the quality of research work improves with enrichment of appurtenant contents and materials leading to the high-quality manuscript. It is however found that lack of training is the obstacle in proper and full utilization of e-journals.

IV. OBJECTIVE OF THE STUDY

The objectives are-

- ❖ To find out the effectiveness of e-learning in the field of research projects.
- ❖ To find out the emerging trends in a new content of research.
- ❖ To find out the uses of ICT as a powerful media of research.
- ❖ To find out whether ICT as the electronic device serves as a productive means of learning.

Hypothesis of the study

The hypothesis can be framed like-

- ➢ There is no significant impact of modern trends in research-oriented eLearning
- ➢ There is no significant application of ICT that consists of e- devices for the constructive learning process.
- ➢ There is no significant relationship that ICT as a substance powerful function for research.

V. RESEARCH METHODOLOGY

The study is based on Quantitative & Qualitative Research. The focus on the study mainly depends on the various outlooks of e- research. E- research is conducted from internet-based tools & global collaboration in key areas. The study conducts on 50 teachers & 50 scholars from different colleges & universities of Kolkata. For the data collection researcher uses the primary techniques of the questionnaire, interview was conducted and taken help from different kind of journals, books websites.

5.1 scope of the study

The study is conducted for utilizing the modern trends of networking base tools to apply for research projects. It mainly anchored the emerging trends of ICT on how to make prime use of e- research.

5.2 Sample design

- Sampling Methods- Random Sampling
- Sample Size- 100, 50 Teachers & 50 Scholars, male & female both
- Location of the study- Kolkata
- Research Instruments- Primary & Secondary Sources

5.3 Tools

A questionnaire with very simple and general questions is developed to assess the impact of emerging trends of research-oriented eLearning among two groups of persons. Teachers belong to the age group within 35 to 60 & scholars are within 26 to 32. Three-point scale is used for analysis.

Table- 1. Questions

SL. No	QUESTIONS
Q1.	Research is easily made by modern facilities
Q2.	All teachers & scholars accepted this new dimension
Q3.	Comparison between eLearning & traditional face to face learning
Q4.	Web networking site as an effective tool for e- research
Q5.	Easily reachable the database for research purposes.
Q6.	Researcher modifies their project works very comfortably
Q7.	Impact the modern trends in research projects
Q8.	Impact the emerging trends in researc- oriented eLearning
Q9.	Impact of ICT to solve the complex calculation easily
Q10.	Under friendliness of eLearning platforms

The results of 10 questions are shown graphically. Responses are described in agree, undecided, disagree

FIGURE-1.

Q1. Research is easily made by modern facilities

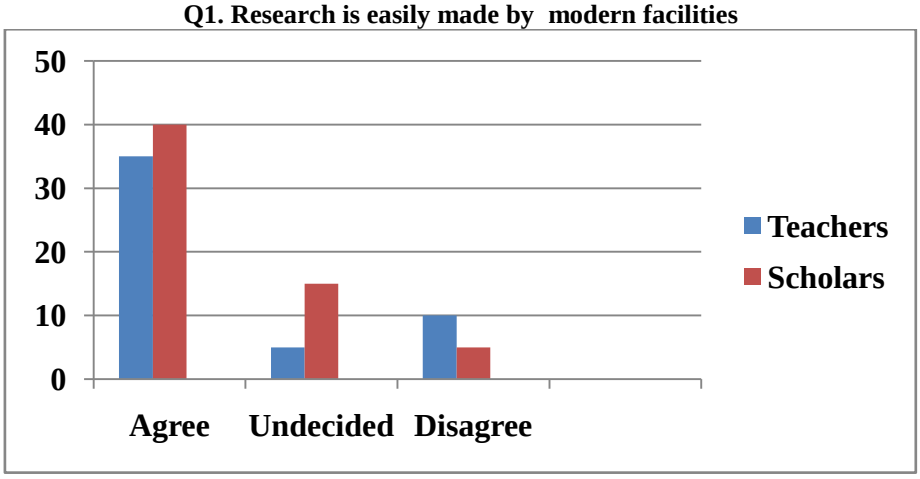


FIGURE -2

Q2. All teachers & scholars accepted this new dimension

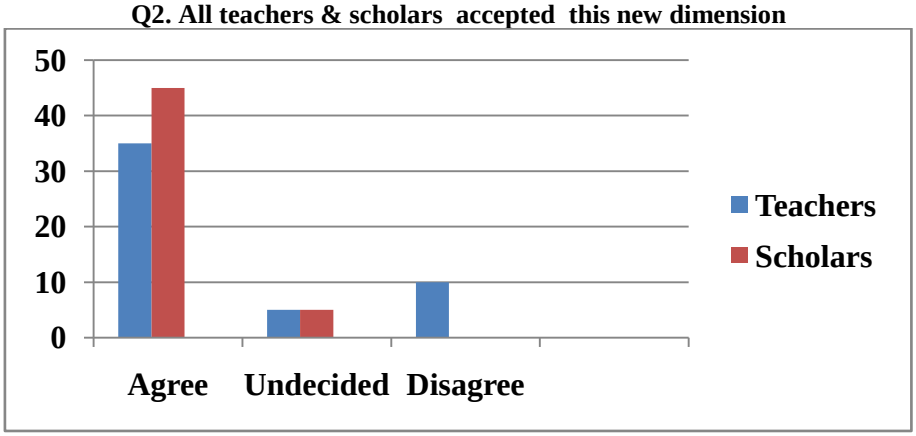


FIGURE- 3

Q3. Comparison between e- learning & traditional face to face learning

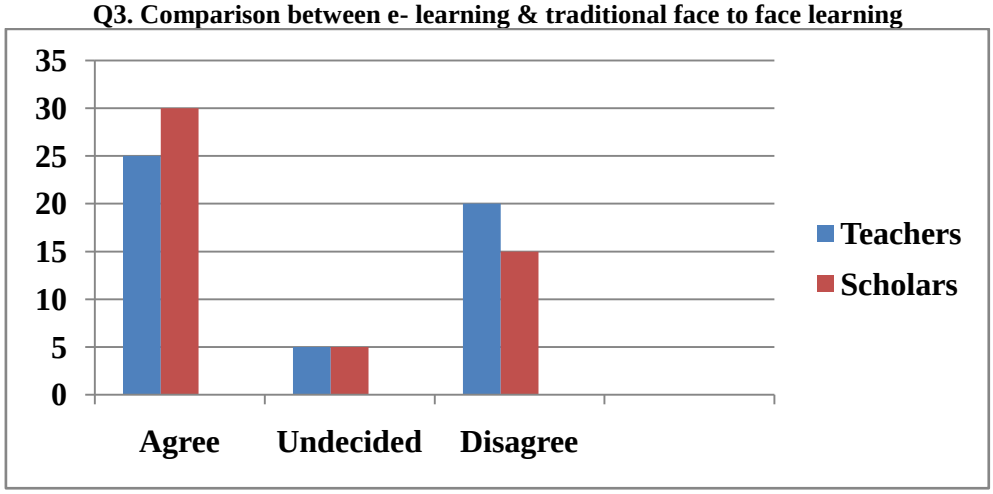


FIGURE 4

Q4. Web networking site as an effective tool for e- research

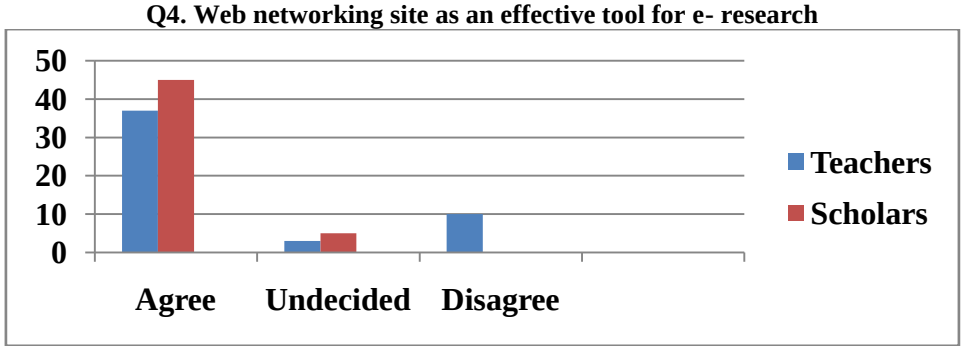


FIGURE- 5

Q5. Easily reachable the database for research purposes.

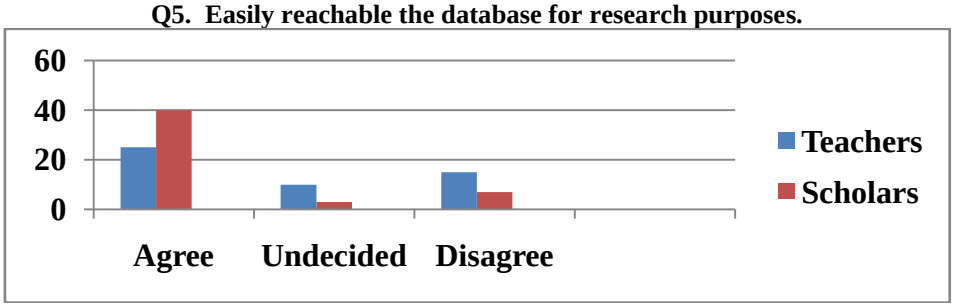


FIGURE -6

Q6. Researcher modifies their project works very comfortably

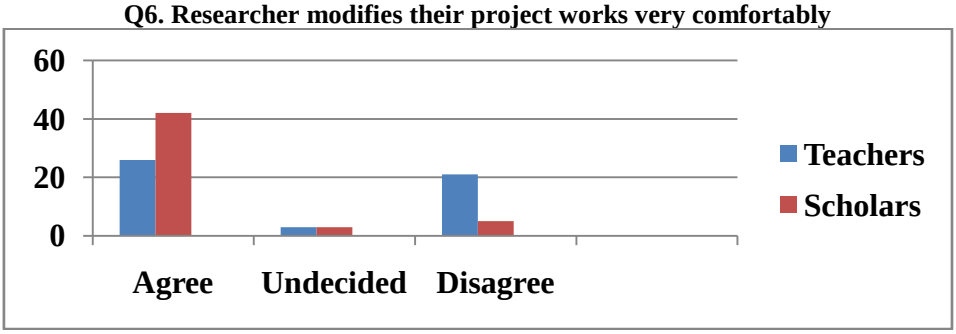


FIGURE- 7

Q7. Impact the modern trends in research projects

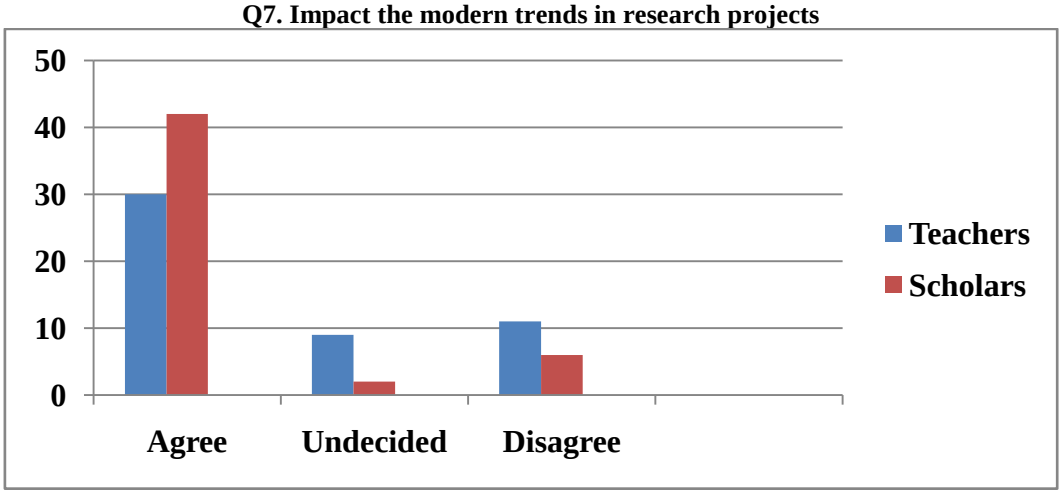


FIGURE -8

Q8. Impact the emerging trends in research-oriented e- learning

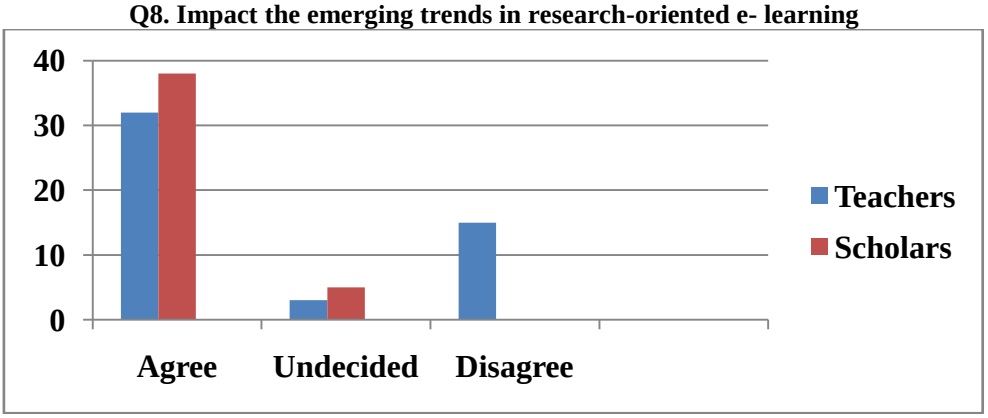


FIGURE-9

Q9. Impact of ICT to solve the complex calculation easily

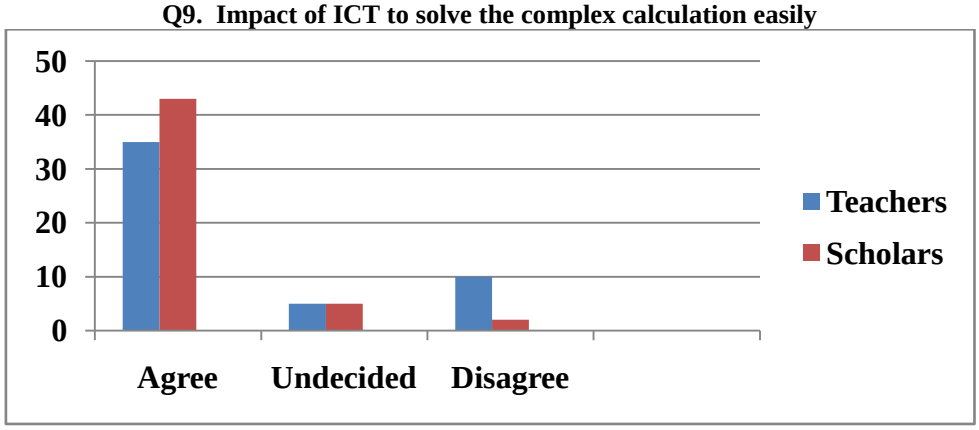
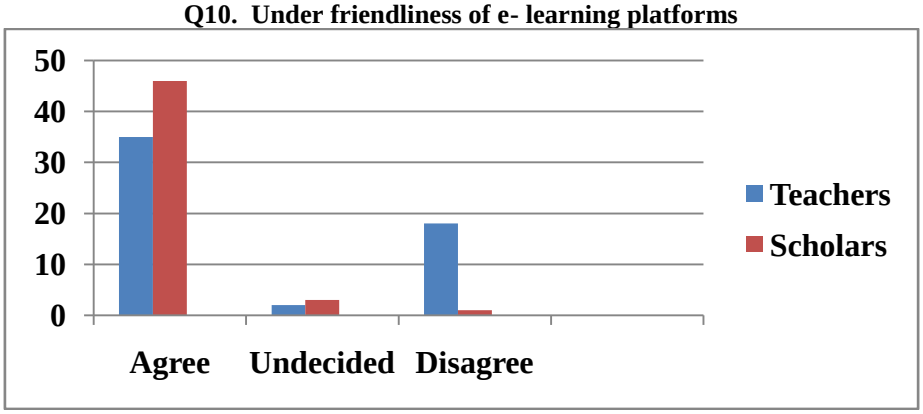


FIGURE- 10

Q10. Under friendliness of e- learning platforms



5.Aanalysis of data

The data are analyzed by the statistical functioning. Like Descriptive Statistics (Mean, Median, Mode, Sd, Variance), t-test, ANOVA.

Table 2: Statistical Analysis of Teachers

Mean	49.8
Standard Error	2.017
Standard Deviation	14.26
Sample Variance	206.1
Median	46
Mode	43
Kurtosis	0.299
Skewness	0.983
Confidence level (95%)	4.054

Table3: Statistical Analysis of Scholars

Mean	56.2
Standard Error	2.207
Standard Deviation	15.61
Sample Variance	243.7
Median	51.5
Mode	48
Kurtosis	-1.083
Skewness	0.134
Confidence level (95%)	4.436

Table 4: T-Test of Teachers and Scholars (Significance of 0.05% level)

	Scholars	**Teachers**
Mean	56.2	49.8
Variance	248.7	206.1
Observations	50	50
Pooled Variance	227.4	
DF	98	
T -test	2.09	
P (T<=t) one-tail	0.0196	
t Critical one-tail	1.66	
P (T<=t) two-tail	0.039	
t Critical two-tail	1.984	

From the list of 't' ratio, researchers see that for the DF = (degree of freedom) 98, the table value of 0.05% level is 1.98. From the above calculation, the 't' value is 2.09, which is greater than to table value. Therefore the value is significant. So the null hypothesis is rejected and there is a significant impact of ICT as an effective tool in the research project.

Table 5: ANOVA: Single Factor

SUMMARY

Groups	**Count**	**Sum**	**Average**	**Variance**
Teachers	50	2483	49.8	206.1
Scholars	50	2809	56.2	248.7

ANOVA

Source of Variation	SS (Sum of square	DF	MS (Mean square variance)	F test	P-value	F-critical value
Between Groups	1062.76	2	1062.76	4.753429	0.031634	3.938111
Within Groups	21910.6	98	223.5776			
Total	22973.36	100				

From the list of 'F' ratio, researchers see that for the DF = (degree of freedom) 100, the table value of 0.05% level is 3.938. From the above calculation, the 'F' value is 4.753, which is greater than to table value. Therefore the value is significant & the null hypothesis is rejected. Thus, it's defined that too easily accept the consequences of the emerging trends of research -oriented eLearning.

VI. FINDINGS OF THE STUDY

Interpretation of the responses given by the scholars are discussed through figure wise.

- Figure1: Among the 100 people, 50 are teachers & 50 are scholars. Most of the teachers & scholars accepted the modern facilities to apply in research, but few teachers believe in traditional content.
- Figure2: Represents that research scholars easily adopted the new dimension of modern trends, but 5% of teachers are standing in their traditional dimension that is research should be on proper guidance, not on the impact of ICT.
- Figure3: Some teachers admitted the facilities of eLeaning & but some mostly preferred the face to face learning, but scholars are easily accessed to eLearning
- Figure4: Most of the teachers & scholars are easily able to accept the effectiveness of internet tools, but few teachers are stuck with their old views.
- Figure5: Scholars & 50% of teachers satisfy the accessibility of the web tool, but 30% of teachers are not accepting the good impact of new trends
- Figure6: Most of the scholars are admired that they'll easily modify them through e- research, but some of the teachers are not accepting the modern techniques.
- Figure7: Some teachers & most of the scholars are preferring the modern trends in research projects, but few teachers do not prefer this.
- Figure8: Most of the scholars & few teachers are taking the emerging trends of research-oriented eLearning, but few are not accepting.
- Figure9: Almost all scholars & teachers are accepting the impact of ICT to solve the complex data very easily, but few teachers are not satisfied with the use of ICT
- Figure10: Most of the scholars & some teachers easily adopt the friendliness of eLearning platforms & tools, but few teachers are no adopting this.
- Hypothesis1: The null hypothesis is rejected, it's mean that research has easily adopted the new trends of e- learning.
- Hypothesis2: The null hypothesis is rejected, is showing that the good impact of ICT that consists of e-devices are used for the constructive learning process.
- Hypothesis3: The null hypothesis is rejected, it's following that ICT as a substance powerful function of research.

VII. DISCUSSION

It was found from the study that, the Information and Communication Technolgyis an essential for the progressive people, society and also for the teachers , scholars for searching and creating knowledge.Through the use of eLearning devices society grows automatically and at the same time it is very much useful for curriculum development, examination procudure and other various productive works. ICT provide adequate information to teachers and scholars, motivates them and make them free from technophobia. It is therefore a powerful mdia of research. As a electronic device it serves as a great productive means of learning. Now a days all type of research has easily adopted the new trends of eLearning . In order to improve our educational system, research field, e-learning is much more important. It also helps individualized learning. In higher level students have their own needs, interest, opportunities to show, own view to go forth to each their destiny. After the result and findings it can be well said that e- learning is the only method which can teach everyone effectively, efficiently. On the whole it was found that, eLearning is a user friendly devise. Modern trends, tools, facilities are easily accessible. Project work, modificaton , problem solving can be easily done. At the time of scarcity of resorcess , manpower fundings, eLearning is appropriate and useful media for all the people involved in teaching learning procedure.

VIII. CONCLUSION

It is concluded by saying that qualitative improvement is possible in the teaching-learning process, in the research area, and much innovative technologies by using the various emerging trends of e-learning. Carefully planned the design of ICT helps all the teachers and researchers to access the required services they need. Researchers are constantly aware of the recent trends of eLearning and their uses. Nowadays it was seen that, people using such electronic media for their research and several other purposes. These different forms of eLearning motivate the researcher to do much scientific research which also helps the society in the other way round. The use of ICT also makes the management process more effective.

Recently at this time of lockdown all Eductional Institution , teaachers taking the help of eLearning route to complete the syllabus of the semesters. Many webinars are organised where people joined the webinar virtually.

We all are aware about the situation emerging out of the global pandemic and the consequent lockdown. Due to this lockdown everything has come to an abrupt pause and the academic world is not an exception. With this forced closure of everything , educational institutions, the entire higher education system has been badly disturbed . In this type of situation eLearning has helped and emerged as the most effective option for everyone, the students, teachers as well as the college, university management.

Therefore, it can be said, nothing is impossible in this 21st century to reach out by accessing the emerging trends of technology.

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