Volume: 2
Issue: 1
January, 2020

ISSN 2581-8325

# INDIAN JOURNAL OF EDUCATIONAL TECHNOLOGY

Central Institute of Educational Technology
National Council of Educational Research & Training

*Research Article*

# Assessment of e-Learning Readiness of Academic Staff & Students of Higher Education Institutions in Gujarat, India

**Y.Vijaya Lakshmi**
*Assistant Professor, School of Education,*
*Central University of Gujarat, Gandhinagar, Gujarat*

**Jaishree Das**
*Associate Professor, Department of Education, Faculty of Education & Psychology,*
*The Maharaja Sayajirao University of Baroda, Vadodara*

**Ishfaq Majid**
*Research Scholar, School of Education,*
*Central University of Gujarat, Gandhinagar, Gujarat;*
*Corresponding author Email: vijaya.lakshmi@cug.ac.in & jayayanduri@gmail.com*

## Abstract

Gujarat has many prestigious higher education institutions which are inclined towards using e-learning platform. The present cross-sectional study is an attempt to assess the eLearning readiness of the stakeholders of these institutions. For this, data was collected (physical/e-form) through a self-developed questionnaire from a sample of 12 lab administrators, 83 teaching staff and 153 students belonging to 35 colleges of Gujarat which are using the e-learning practices. Frequency, percentage and intensity index were used to analyze the data. Majority of the stakeholders have a positive perception towards concept of e-learning and believe that it has many benefits. However, they feel that e-learning helps to a lesser extent in maintaining transparency, face to face contact and interactivity. These factors may hinder their readiness towards e-learning. Also unreliable technology and lack of faculty members' confidence and expertise to use this platform in teaching environment are seen as biggest barriers in e-learning. Hence, there is an immediate need to plan for training programmes which will help in improving the confidence of faculty members in using this platform and would increase their e-learning readiness.

**Keywords:** e-learning readiness, e-learning, Higher Education

## Introduction

Indian higher education is one of the world's largest educational system which faces many challenges despite making significant progress. Educational technologies especially e-learning is proving to be a good solution and of highest priority in addressing some of the challenges in higher education. E-learning is opening new opportunities of transforming the educational

process. If well designed and managed, e-learning can overcome many barriers associated with traditional learning (Hijazi et al., 2003). It is a concept which encompasses students, faculty members, and e-learning managers (Persico et al., 2014). The challenges posed by e-learning are better understood and addressed when there is an understanding about its stakeholder's readiness towards it (Kaur & Abas, 2004). However, the increasing trend of adoption of e-learning in higher education institutions is raising questions like: What is the opinion of the students, faculty members towards e-learning, its advantages, disadvantages and challenges? How far the faculty members are ready in terms of their skills to ensure that the powers of these growing technologies are harnessed?

The evaluation of e-learning readiness can be done from (a) the point of view of its various stakeholders (students, teachers, e-learning experts/lab administrators etc. (Agboola, 2006; Persico et al., 2014) (b) the point of view of various factors like technological, organizational, environmental, nature of course offered etc. (Kaur & Abas, 2004). From the perspective of stakeholders, most of the times faculty members perceive e-learning to be positive and useful. However, they also had many issues which reduced their readiness towards e-learning (Siphamandla et al., 2014; Fathimath. T, 2016). On the other hand, majority of the students also perceived that e-learning is useful and effective (Fageeh, 2011). However, studies also showed that student's satisfaction was less in e-learning platform than in traditional system or they were still not ready for e-learning (Fathimath. T, 2016; Kaur & Abas, 2004; Keller & Cernerud, 2002). Studies also suggested that institutions, policy makers and regulatory bodies have to play a more concrete role in enhancing the e-learning facilities and programmes (Kaur & Abas, 2004).

In India, a fair amount of literature on e-learning studies dealt with aspects like e-learning quality (Agariya & Singh, 2012), perceptions, readiness, attitude towards e-learning (Azimi, 2013). However, majority of these studies are focused to study the readiness or perceptions from a single point of view like that of teachers or students or administrators. Moreover, these studies confine to very micro level with single university or an institution (Azimi, 2013). Gujarat state is witnessing a tremendous growth in higher education and many of them are moving towards harnessing the benefits of e-learning. Hence, there is a strong need for doing this study.

## Theoretical Framework

E-learning readiness is the level of mental & physical preparedness of an organization in terms of technological skills, online learning style, equipment/ infrastructure, attitude, human resources, financial etc. (Mutiaradevi.R, 2009; Parlakkiliç, Alaattin, 2015).The critical success factors for e-learning identified by various researchers include: instructor; student; information technology; university support, financial, infrastructure, human resources, content, environment, psychological,

social etc. (Hasan, 2007; Khan, 2012; Tubaishat and Lansari, 2011). From the perspective of stakeholders, most of the times faculties perceive e-learning to be positive and useful. However, they also had many issues which reduced their readiness towards e-learning (Siphamandla et.al, 2014; Fathimath .T, 2016). On the other hand, majority of the students also perceived that e-learning is useful and effective (Fageeh, 2010; Wattakiecharoen & Nilsook, 2013; Ngampornchai & Adams, 2016) however, studies also showed that students satisfaction was less in e-learning platform than in traditional system or they were still not ready for e-learning (Keller & Cernerud, 2002; Kaur & Abas, 2004; Fathimath.T, 2016). Studies also suggested that institutions, policy makers and regulatory bodies have to play a more concrete role in enhancing the e-learning facilities and programmes (Kaur & Abas, 2004; Darab and Montazer, 2011; Nasrudin Md Rahim et.al, 2014; Edumadze, J.K.E et.al, 2014).

## Objectives

The following are the objectives of the present study:

- To study the infrastructure available in the institutions adopting e-learning practices
- To study the opinion of stakeholders regarding e-learning, its benefits, disadvantages and challenges.
- To study the familiarity of faculty members and lab administrators with respect to use of various e-learning tools.

## Operational Definition of terms

In the present study stakeholders refer to faculty members, students and lab administrators of the higher education institutions and e-learning is defined as an electronic medium which is manifested in form of a. Digitalized course outline\lecture notes outline b. Official use of e-mail c. Official use of online discussions/blogs etc. e. Digitalized assessment f. Digitalized projects announcements & submissions g. Virtual classrooms (VCR) h. Video conference i. Web based trainings (WBT) j. Fully online courses and used in teaching-learning, training, skill enhancement, evaluation etc. either through internet or intranet.

## Research design and Methodology

### Sample

All those higher education institutions which have their website listed on commissionerate of Higher Education, Government of Gujarat database (website) were contacted through email. A mail clarifying them the definition of e-learning was sent and was asked if their institutions were adopting e-learning practices or not. To respect the rights, values, and sentiments of the research participants, we informed them about the purpose of the study and confidentiality and assured them of maintaining the anonymity regarding their institutions names. 35 colleges responded that they were using e-learning practices. Out of these, investigators personally visited and collected data from 22 colleges which

did not show acceptance to respond to e-tool. The stakeholders of remaining 13 colleges who showed positive response to fill the e-tool were sent the same. Thus, in all 12 lab administrators, 83 teaching staff & 153 students from various programmes like, Medicines, Engineering, Management, Education etc. of 35 colleges participated in the study (Figure - 1). Therefore, the sample for the present study is based on accessible population rather than on target population.

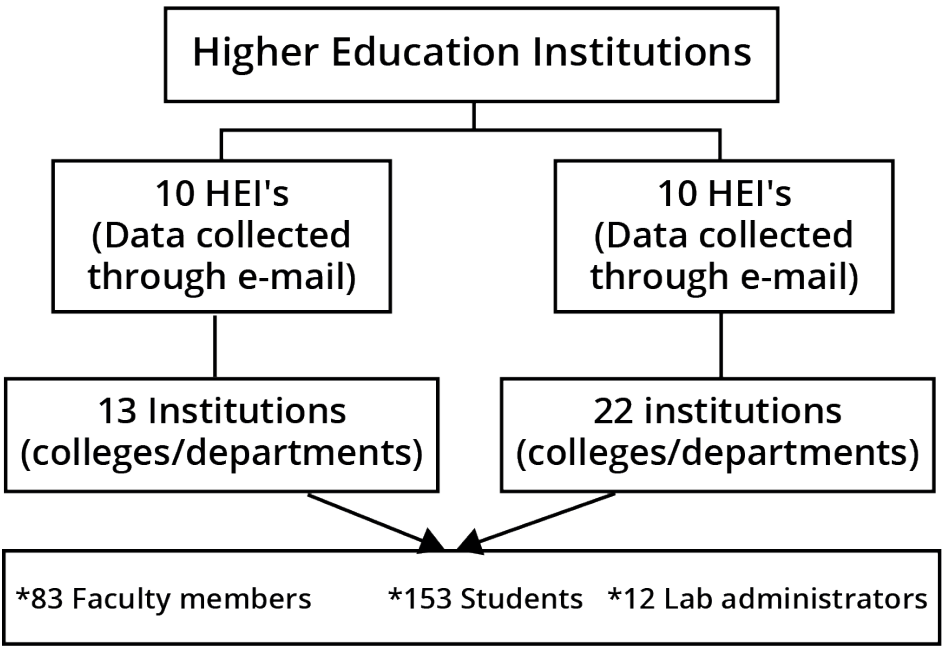


**Figure - 1: Participants in the study**

## Instrument

This cross-sectional study involved a random sample of faculty members, students and lab administrators from above mentioned 35 colleges. Data was gathered with the use of self-made questionnaire consisting of a combination of items like Yes/No and rating scale items which was developed by the investigators after going through extensive literature (Agboola. A.K, 2006; Aydin & Tasci, 2005; Hasan, 2007; Khan, 2012; Mutiaradevi. R, 2009; Tubaishat and Lansari, 2011). The tools included items related to aspects like infrastructure readiness; opinion regarding e-learning, its benefits, disadvantages, barriers etc.; familiarity with e-learning tools etc. Separate questionnaire for students, teachers and lab administrators was developed to collect data in both e-form and hard copy.

## Data Analysis

Intensive care was taken to ensure that the participants respond to all the questions of the tool. The collected data was analyzed using percentages, frequencies, intensity index (here after, II). II indicates exact point of intensity

preferred by the sample for each item in a likert scale.

By transforming the data into a single number, it is easy to make a decision about the response of the participants to the given statement (Chaudhari, Pinkal, 2016; Khirwadkar.A and Chaudhari.P, 2019; Kothari.C.R, 2004; Lakhera Himangani, 2017; Sunil Kumar, 2016). In the present study, II was calculated using the following formula for an item in a five point scale arranging from higher intensity to lower intensity.

II = ((f1*5)+ (f2*4)+ (f3*3)+ (f4*2)+(f5*1)) /(f1+f2+f3+f4+f5)

Where, f1, f2, f3, f4 and f5 are the frequencies from higher intensity to lower intensity (Chaudhari, Pinkal, 2016; Khirwadkar.A and Chaudhari.P, 2019; Kothari.C.R, 2004; Lakhera Himangani, 2017; Sunil Kumar, 2016). The analyzed data was then synthesized & presented.

## Results and Discussion

### Findings related to Facilities/Resources Available for Adopting e-Learning Practices

Connectivity & physical communication infrastructure is the foundation of electronic-readiness for a country (Aydin & Tasci, 2005; Eze et al., 2013). From the findings it was observed that, many of the higher educational institutions have Wi-Fi connectivity in their campus and the institutions which did not have Wi-Fi connectivity in the campus had a minimum 2 & maximum of 4 computer labs. The ratio of computers to students in all the institutions is around 1:2 and around in 80 percent of the computer labs, all the systems have internet connection.

As high as 73 percent of faculty members responded that they have individual personal computers for them in their staff rooms. Among them, 90percent of participants responded that their personal computers are connected to internet. Around 63.64 percent lab administrators expressed that their institutions have software specialists for the purpose of adopting e-learning practices, and around 54.55 percent of them expressed that they have the authoring tools which are required for the purpose of adopting e-learning practices. 100% of them expressed that their institutions have high bandwidth connectivity & much secured network connectivity. 90 percent of them expressed that they have free and unlimited internet access. With respect to connectivity with digital libraries, around 72.73 percent of them said that their network has connectivity with the digital libraries of their institutions and also other pay and use digital libraries. A higher percentage of i.e. around 72.73percent of them said that latest software were available with them. However, only 36.36percent of lab administrators expressed that they used LMS (Learning Management System) for providing e-learning practices.

Mutiaradevi. R, 2009, Siphamandla Ncube, et al., 2014, Parlakkiliç, Alaattin, 2015 support the point that facilities/ resources available for adopting e-learning practices play an important role in determining the e-learning readiness. The above findings show that majority of institutions are well equipped in terms of network and

connectivity. However, majority of them are using basic e-learning technologies, a very few of them are using features like, LMS/Content Management System (CMS) in their e-learning platform.

### Findings related to opinion regarding e-Learning

Individual readiness & positive perception about e-learning significantly improve the effective use of e-learning (Aydin & Tasci, 2005; Sadik, 2007). In our survey, the respondents were asked about their opinion regarding e-learning and it was found that, around 24.1 percent of the faculty members felt that e-learning is very valuable while 71.08 percent of them felt that it is a valuable practice. 83.13 percent of the faculty members felt that gender was not significant for responding to e-learning (Aydin & Tasci, 2005; Parlakkiliç, Alaattin, 2015) which is in contrast to findings of Agboola, A.K, (2006), Proctor & Burnett (2006). Moreover, 50.6percent of the faculty members expressed that academically well prepared students responded more positively to e-learning practices than academically less prepared students. Around 58.3 percent of the lab administrators felt that e-learning is a very valuable practice.

It is clear that stakeholders have positive opinion regarding e-learning which is a good sign for the institutions which are using the e-learning practices and also for the institutions which are planning to use e-learning practices in the near future as attitude toward e-learning directly affects individuals readiness (Akaslan, D.,& Law, E, 2011;Aydin & Tasci, 2005; Sadik, 2007)

### Findings related to Benefits of e-learning

Positive culture is created in the institute if all the stakeholders realize the benefits of e-learning (Sadik, 2007). Stakeholder's belief and appreciation towards the benefits of e-learning has a major impact on e-learning readiness.

### Faculty members

The II regarding personal benefits of e-learning as perceived by faculty members ranged from 2.26 to 3.23 (Table - 1). Most of them felt that spreading of information becomes easy and faster in the e-learning and it also becomes easy to update the student's records and it helps students to learn at their own pace at any time and in any place. Re-use of the content is also seen as one of the benefits of e-learning. In terms of professional benefits of e-learning, according to them, reaching more students in less time and ease of providing additional information regarding the course to the students are the highest advantages of e-learning.

**Table - 1: Percentage wise Distribution of Ranking for the Personal and Professional Benefits of E-Learning as Marked by Faculty Members along with Intensity Index (II)**

| Personal Benefits | | | | | |
|---|---|---|---|---|---|
| **Particulars** | **1st** | **2nd** | **3rd** | **4th** | **II** |
| Spreading of information related to the content becomes easy and faster. | 47.14 | 34.2 | 12.86 | 5.71 | 3.23 |
| Students can learn at any place, pace, and any time | 34.25 | 17.8 | 24.66 | 23.2 | 2.63 |
| Re-use of content | 17.57 | 21.6 | 29.73 | 31.0 | 2.26 |
| Easy to update the students records | 35.62 | 21.9 | 21.92 | 20.5 | 2.84 |
| **Professional Benefits** | | | | | |
| Assist in maintaining transparency | 19.12 | 19.1 | 30.88 | 30.8 | 2.26 |
| Re-use of content | 26.39 | 26.3 | 20.83 | 26.3 | 2.38 |
| Easy to provide additional information regarding the course | 29.85 | 40.3 | 19.40 | 10.4 | 2.90 |
| Can reach more students in less time | 52.70 | 25.6 | 10.81 | 10.8 | 3.20 |

These findings confirms the assertion made by various researchers that e-learning is not limited by time, space and location and many other benefits (Siphamandla Ncube, et al., 2014; Smedley, 2010; Unneberg, 2007). However, "assist in maintaining transparency" benefit of e-learning was rated least. During the process of data collection the investigators could observe that some faculty members were using e-learning platform effectively for academic and administrative purposes.

## Lab administrators

Table - 2 shows the II for benefits of e-learning as ranked by lab administrators. Just like faculty members, even they felt that spreading of information becomes easy & faster in the e-learning platform & it enables learning at any place, pace and at any time. The benefit which is ranked 3rd by them is that "e-learning helps in development of professional skills" and thus it enables them to be upto date with professional needs. Ease of communication, flexibility of time, place and pace are the most important benefits of e-learning (Smedley, 2010; Wagner et.al, 2008).

**Table - 2: Percentage wise Distribution of Ranking for the Benefits of E-Learning as Expressed by Lab Administrators along with Intensity Index (II)**

| Particulars | 1st | 2nd | 3rd | 4th | II |
|---|---|---|---|---|---|
| Spreading information becomes easy and faster | 66.67 | 16.66 | 16.67 | 0 | 2.50 |
| Helps in being upto date with professional needs | 33.33 | 22.22 | 44.44 | 0 | 1.89 |
| Assists in development of professional skills | 33.33 | 44.44 | 22.22 | 0 | 2.11 |
| Enables learning at any place, pace and any time | 33.33 | 50.00 | 16.67 | 0 | 2.17 |

## Students

They felt that the most important benefit of e-learning is that it enables learning at any time and at their own pace (Table - 3). Moreover, just like faculty, even students feel that ability of e-learning in maintaining transparency is less.

**Table - 3: Percentage wise Distributions of Ranking for the Benefits of E-Learning as Ranked by Students along with Intensity Index (II)**

| Particulars | 1st | 2nd | 3rd | 4th | 5th | II |
|---|---|---|---|---|---|---|
| Ease of access of information related to the course | 27.21 | 17.6 | 21.3 | 28.7 | 5.15 | 3.33 |
| Students can learn at their own pace | 22.56 | 20.3 | 35.3 | 15 | 6.77 | 3.37 |
| Enables learning at any time | 25.55 | 38 | 24.1 | 10.2 | 2.19 | 3.74 |
| Enables learning at any place | 22.6 | 15.1 | 12.3 | 26.7 | 23.3 | 2.87 |
| Assist in maintaining transparency | 8.462 | 6.92 | 9.23 | 18.5 | 56.9 | 1.92 |

Other studies showed that students did not regard access to e-learning as a benefit as compared to personal interaction (Keller & Cernerud, 2002) & preferred hybrid learning to complete online learning (Eldeeb, 2014). In some places where face-to-face mode was not available or it was not according to their convenience, students opted for e-learning only (Huss and Eastep, 2013). All stakeholders felt that access to information related to the course content becomes easy and fast in the e-learning platform and further it is easy to reach more students in less time. Also, they all felt that e-learning platform provides the scope for learning at own pace, at any time.

## Findings related to Disadvantages of e-learning

The II for disadvantages of e-learning as expressed by the faculty members ranged from 2.55 to 3.77 (Table - 4). Most of the faculty members perceived that e-learning is not a costly affair (Abu-Hassan-Assari, 2005) which is in contradiction to the study by (Akkoyuklu & Soylu, 2006).

**Table - 4: Percentage wise Distribution of the Ranking for the Dis-Advantages of e-Learning as Ranked by Faculty along with Intensity Index (II)**

| Particulars | 1st | 2nd | 3rd | 4th | 5th | II |
|---|---|---|---|---|---|---|
| It is a costly affair | 21.9 | 15.07 | 12.3 | 16.4 | 34.25 | 2.55 |
| Handling and management of content is a technical affair | 10.8 | 24.32 | 24.3 | 28.3 | 12.16 | 2.93 |
| It reduces face to face contact and interactivity | 40.0 | 22.67 | 18.6 | 12.0 | 6.67 | 3.77 |
| As the content is available online for a long time, it reduces students interest | 16.4 | 31.51 | 17.8 | 20.5 | 13.70 | 3.16 |
| In e-mode, it is difficult to trace the students' actual learning. | 26.0 | 20.29 | 27.5 | 14.4 | 11.59 | 3.35 |

The biggest disadvantage as perceived by them was that it reduces face to face contact and interactivity (Young, 1997). Faculty members also felt that in e-mode, it is difficult to trace the student's actual learning (Arkorful & Abaidoo, 2014). They also felt that availability of content for long time online reduces student's interest in it. Some faculty members even felt that handling and management of content in the e-learning platform is a technical affair.

## Lab Administrators:

Most of them felt that availability of content for long time online reduces student's interest in it. They expressed that e-learning reduces face to face contact and interactivity. The two aspects of e-learning, i.e., 'it increases their workload' and also 'effective\real learning does not happen' were rated the least.

## Students

Students also felt that e-learning reduces face to face contact and interactivity and rated it as biggest disadvantage. They expressed that tracing the students' actual learning in the e-mode is very difficult (Table - 5).

**Table - 5: Percentage wise Distribution of the Ranking for the Dis-Advantages of E-Learning as Ranked by Students along with Intensity Index (II)**

| Particulars | 1st | 2nd | 3rd | 4th | II |
|---|---|---|---|---|---|
| E-learning reduces face to face contact and interactivity | 31.75 | 31.75 | 14.29 | 22.22 | 2.73 |
| As the study modules are available online for a long time, e-learning reduces students interest towards the modules | 28.80 | 16.00 | 28.80 | 26.40 | 2.47 |
| In e-mode, it is difficult to trace the students' actual learning. | 21.77 | 27.42 | 33.06 | 17.74 | 2.53 |
| Often, effective\real learning does not happen | 23.02 | 24.60 | 23.81 | 28.57 | 2.42 |

All the stakeholders felt that e-learning mode reduces face to face interactivity and it is very difficult to trace the actual performance of the students. They also said that availability of e-learning modules for a longer time reduces students' interest towards it as they develop the tendency of postponing their tasks. Further, a few faculty members felt that handling and management of content in e-learning mode is a technical affair & considered it as one of the disadvantage of e-learning. However, the positive sign came from lab administrators who felt that adopting e-learning practices does not increase the work pressure.

## Findings related to Challenges/Barriers to e-learning

### Faculty Members

The intensity indices obtained for statements which described the challenges/barriers to e-learning varied from 3.15 to 4.06 (Table - 6). According to faculty, "Lack of knowledge on how to use the e-content on the part of students" is perceived to be the least causing barrier in promoting e-learning practices. Further, faculty members also expressed that adopting e-learning practices would not increase their work load (Lloyd et.al, 2012).

**Table - 6: Percentagewise Distribution of the Ranking Given by Faculty Members for the Challenges/Barriers to E-Learning along with Intensity Index (II)**

| Particulars | 1st | 2nd | 3rd | 4th | 5th | 6th | II |
|---|---|---|---|---|---|---|---|
| Students lack knowledge about how to use the e-content | 10.67 | 13.33 | 13.33 | 28.00 | 12.00 | 22.6 | 3.15 |
| Network access/ Usage problems (unreliable technology) | 27.78 | 15.28 | 22.22 | 9.72 | 19.44 | 5.56 | 4.06 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Students lack self-motivation in using e-content | 27.40 | 16.44 | 15.07 | 19.18 | 9.59 | 12.3 | 3.96 |
| Faculties lack interest and confidence to use this technology in teaching environment | 30.14 | 19.18 | 12.33 | 8.22 | 19.18 | 10.9 | 4.00 |
| Increasing work load on the part of faculties | 12.70 | 20.63 | 22.22 | 14.29 | 19.05 | 11.1 | 3.60 |

However, unreliable technology and lack of interest and confidence on the part of faculty members to use the e-learning practices were found to be biggest challenge in adopting e-learning practices (Agboola, 2006; Mutiaradevi, R, 2009; Parlakkiliç, Alaattin, 2015).

## Lab administrators

According to them, lack of sufficient infrastructure to promote e-learning, technical nature of handling and managing the content in e-learning platform, lack of pre-training were considered to be the biggest barriers in implementing the e-learning platform. Unreliable technology was considered to be the least barrier in adopting e-learning which is in contrast to the opinion expressed by faculty members.

The findings in this section show a positive point that faculty members believe that students have sufficient knowledge to use the e-learning practices. Data also indicates a need for increasing the technical consistency of the e-learning platform. Also, a point of concern is about lack of confidence and interest of the faculty members in using this platform. This should be addressed immediately.

### Findings related to familiarity with e-learning tools

When an institution decides to adopt e-learning, the stakeholders need to be familiar with tasks like development of instructional system, use of software and hardware etc. (Driscoll, 2002).

In terms of working with computers, as high as 69 percent of the students said that they were very comfortable in working with the computers. More than 45 percent of the students work for more than 20 hours in a week on computers and around 19percent of them work between 20 and 10 hours in a week on computers. Around 35 percent of the students use computers between 1 to 9 hours in a week. In terms of using the internet, a majority of students consider themselves as experienced users. Around 23percent of students consider themselves as very experienced users and around 9 percent of the students consider themselves as champions in using internet (Fathimath, T. 2016). Most of the students have medium and advanced expertise in using computer and internet.

When it comes about familiarity of e-learning tools by faculty members and lab administrators, the II obtained for faculty members with respect to Learning Software/Virtual Tutorials, Computer Based Assessment, Virtual Learning Environment (e.g. WebCT,

Blackboard), Video conferencing, Authoring web pages (for specific learning outcomes), Electronic White Boards were 2.51, 2.4, 2.01, 1.98, 1.96, 1.94 respectively. These figures show that, faculty members look familiar with learning software/virtual and they have a very less familiarity regarding all other e-learning tools. The II for these tools reveal that most of the faculty members have not used them at all or have tried these tools hardly once. A very meager percentage of faculty members claimed that they were expert users with reference to their familiarity with the mentioned e-learning tools. This finding is in tune with the studies of Alenezi (2012), Edu madze, J.K.E et.al (2014), Rogers (2000). This scenario is observed to be better with lab administrators because in most of the institutions managing the e-learning platform is considered as a technical task and hence it is mostly handled by them.

Thus, expertise on behalf of students is not an issue in implementing e-learning, however, if the higher education institutions want to reap maximum benefits from the e-learning practices, they should create a platform where their faculty members are trained, exposed & motivated towards e-learning platform.

## Directions for future study and conclusion

The use of e-learning platform is still at infancy stage and hence deeper studies to evaluate the objectives/ mission/goal of the institutions in adopting the e-learning practices can be done. Qualitative studies focusing on the pedagogical aspects of e-learning can also be carried out. The number of institutions in India adopting fully online mode of e-learning are increasing and hence research studies in this direction can also be carried out. The present study reveals that stakeholders believe positively in e-learning, however, they have apprehensions that e-learning also has some disadvantages. A point of concern is also about expertise of faculty members in using various e-learning tools. This again puts forward the point that institutions have just begun this initiative of using e-learning practices and have made least efforts in training the faculty members in these e-learning tools. Hence, this should be addressed. Also the government especially department of higher education should develop e-learning quality guidelines to guide higher education institutions. These findings would help the higher education institutions and others who intend to put into practice the e-learning platform.

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