*International Journal Dental and Medical Sciences Research (IJDMSR)*
*ISSN: 2393-073X Volume 4, Issue 12 (December - 2020), PP 13-17*
***www.ijdmsr.com***

# Readiness of II Year Medical Graduates and Teachers To Implement E-Learning in Academics

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**ABSTRACT:** We are in the era of technology and the current medical graduates are millennials. E- learning has been recognized as an effective method of teaching. An understanding of the current level of computer literacy and usage of technology is necessary to make curricular modifications to implement technology in medical education. Hence, this study was undertaken to know if we are ready to go E-way in medical education.
**Objective**: To assess the readiness of 2nd year medical students and faculty to implement e-learning in academics.
**Materials & methods**: The present study was conducted at a medical college in Karnataka, India. Staff & Students of 2nd yr MBBS participated in the study. A prevalidated questionnaire addressing computer literacy, mode of computer training, frequency and purpose of usage of technology was employed to collect the data. Responses were obtained on dichotomous (for literacy & training) & scores on Likert scale (for frequency & purpose). Data was analysed to compare responses obtained from faculty & students.
**Results:** Technology was used by all the participants among faculty and students. Most of the staff were basic users and the students were intermediate users. The staff used the basic computer skills more often and for academics on a daily basis or several times in a week. Though the students were found to have better knowledge of higher computer skills but they used technology more frequently for non-academic purpose on daily basis.
**Conclusion:** Technology will play a transformative and essential role in the future of medical education. The staff and the students have adequate knowledge of the technology for implementation of e-learning in academics. Proper planning and effective implementation of technology into the medical curriculum should benefit the graduates.

**Key words:** E-learning, Faculty, Students.

## I. INTRODUCTION:

Learning has come a long way from face – to – face interaction between the students and teachers to learning online, in isolation (1). Technology is used for professional development of both students and faculty (2). More so in these times of a pandemic, online teaching learning has become a new norm. E-learning is yet another tool for learning in medical education. It is the acquisition and use of knowledge distributed and facilitated primarily by electronic means (3). E-learning interventions are varied from non-networked computer-based e-learning, internet-based learning, psychomotor skill training, virtual reality environments to digital game-based learning. It is flexible, engaging and student-centered. The common modalities used in e-learning are flipped classrooms, smart phones, online education sites, skill laboratories etc., Though e-learning is asynchronous where there is a time gap between the instructions provided and response of the learners, it still encourages effective interaction and collaboration between students and faculty and among peers (4).

When the option is to go the e-way, we need to keep the current trends of e-learning in medicine, its effectiveness and its role in facilitating to deliver the new competency based curriculum (5).

Students are varied learners with preference for different learning methods (6). In the era of millennials, incorporating technology in learning makes more sense. The readiness is expected not only from the students but also from the staff and the organisations (3) to come forward and make provisions for the successful implementation of technology in medical education. The perceptions among staff and students has been well documented in many studies. Better understanding of subject, better skills development, easy accessibility, and flexibility are some of the pros of e-learning by the students. However, lack of interaction with teachers, in-depth discussions and lack of clarifications of concepts are some of the cons reported (4).

Teachers find e-learning platform convenient as it saves time in editing and uploading content. The availability of teaching material allows access to students at any point of time. However, the teachers who are

not tech savvy find this as an additional burden, have time constraints and are unable to meet the technical demands (4).

This study is an attempt to see if the students and faculty are ready to adopt the technology in teaching-learning.

## II. METHODOLOGY:

The present study was conducted in a medical college in Karnataka, India. It was an observational questionnaire-based study. Second year students and staff handling the second-year subjects including PSM staff were included in the study. Institutional ethical clearance from the ethics committee of the college and consent from the participants was obtained. A pre validated questionnaire was used (2) based on computer literacy, mode of training, frequency and purpose of usage of technology with some changes. The questionnaire was then validated by the faculty of medical education and a pilot study was conducted on a small subset of staff and students. Following which, necessary changes were made based on the inputs received.

The computer literacy of the participants was based on the ability to use internet and various software programmes like word processing, spread sheets, presentation softwares, photo editing, trouble shooting, teaching software skills and website maintenance. The participants were called basic users when they had the ability to use internet, word processing and spread sheets. The intermediate users had even better skills in using presentation soft wares and photo editing. The advanced users were those who had knowledge on trouble shooting, ability to teach others the software skills and even website maintenance.

The mode of training in technology by the faculty and students was also obtained. It was based on whether the computer skills were taught as a programme in school curriculum or professional training outside the formal education or was it informal and self-acquired by personal usage and experience.

Finally, the use of internet for academic and non-academic purposes and the frequency of utilization of internet was analysed.

The above said data was collected and analysed on SSPS and Chi-square test was applied to compare the responses between faculty and students.

## III. RESULTS:

A total of 38 staff from second year including PSM staff and 180 students from 2$^{nd}$ yr MBBS participated in the study.

Based on the computer literacy they were divided into basic, intermediate and advanced users. (Table 1). Most of the staff (60.52%) were basic users and were familiar with the use of internet and basic word processing. The staff had a better knowledge of word processing, use of spread sheets and presentation softwares. The p value for usage of presentation softwares was 0.017, which was very significant. Majority of the students were intermediate users (53.88%) who had sufficient knowledge in basics as well as usage of various software programmes which was statistically significant (p – 0.012). Among the advanced users, the students had better knowledge of hardware and software, trouble shooting skills and ability to teach others. The students had more experience with regard to higher skills like website maintenance (p – 0.051) whereas, very few staff had this experience (Table 2).

Most of the staff had obtained knowledge regarding use of technology informally through self-practice (72%) and few had undergone courses for computer education (28%). None of the staff had computer education as a part of their school curriculum. Whereas, 82% of students had formal education in computers as a part of their school curriculum. Others (18%) had either undergone a formal course or had learnt it on their own.

Frequency of usage of internet for academic and non – academic purposes was also studied. All the staff and students used internet for the above-mentioned purposes. The frequency of usage of internet for both academic (53.88%) and non – academic (85%) purposes was higher among students on a daily basis. Whereas, 36.84% of the staff accessed internet for academic purposes and 73.68% for non-academic use everyday. 55.26% of the staff accessed internet for academic purposes several times a week. (Fig 1 & 2).

## IV. DISCUSSION:

Technology is one of the most effective tools in education and plays an important role in facilitating learning (7). Healthcare and medical education are not immune to the evolving use of technology. Advances in simulations, virtual patients and e-learning are used as teaching methods to facilitate active, learner centered teaching (8). The use of technology helps in achieving some of the educational goals like self-directed learning, independent learning, collaborative learning etc., (7). With the introduction of competency-based curriculum in India for the millennial students, the facilitators have a herculean task in selecting and providing appropriate technology-based curriculum to the medical millennials.

In the present study, 38 staff and 180 students participated. Most of the staff were basic users (60.52%) and students were intermediate users (53.88%). The students had better knowledge of advanced skills (13.88%)

in contrast to staff (7.89%). In a similar study, it was found that 80% of medical staff showed interest in technology (9). Though the staff lacked knowledge of relevant and valid sources for their teaching and even the awareness of existence of such material, some attributed being basic users for lack of time and understanding of usefulness of e-learning to students (2, 10). In another study, the faculty attributed their lack of knowledge regarding information technology to lack of exposure to such facilities during their medical training which was more teacher centered (11). Students had better knowledge of higher skills and had used the basic skills less than the staff. Most of the students were intermediate users. They used technology to connect with friends & web browsing for various purposes which required higher skills. An interesting fact in one of the studies which appears to be true is that the students tend to be tech savvy because they believed that having a good knowledge of technology influenced their social status (12). However, the students did not use the basic skills as much as the staff and this could be attributed to the absence of such basic skills to be developed mandatorily in their curriculum (1).

The faculty and students, made use of the internet for various purposes. In most of the studies, all the staff and students were found to be familiar and comfortable with the use of technology and have a positive attitude for implementation of e-learning (10,12).

The majority of the staff (97.3%) used word processing in their teaching. 88.8% of the students used the same. This was comparable with other studies (2) where 98.2% of faculty and 85.5% of students used it. Other presentation softwares like spreadsheets and presentation softwares also were used more frequently by the staff (92.1% & 97.3% respectively) when compared to students (81.1% & 82.2%). In another study, 62% of the staff could find and launch softwares and could navigate between the programmes (9). They could create and access information (81%) and save the work done on system to hard disk (87%). Even skills like exiting or quitting a programme and properly shutting down the system were tested and found that 84% of the staff did these tasks correctly (9). The higher frequency of usage of the above mentioned softwares was for teaching and research purposes (2). The students might have used these softwares for their seminars and projects which is usually a part of their methods of training in the schools and pre university colleges.

In our study, both the staff and students used photo-editing softwares in equal frequency (89.4%). This was in contrast to other studies where the usage was only 45.6% by faculty and 51.1% by students (2). This could be because of the study population being dental students and faculty.

The students had a better knowledge and experience with regard to advanced skills like trouble shooting (53.8%) and website maintenance (40.5%). Only 42.1% and 23.6% staff had experience in the respective skills. The ability to teach software skills was comparable for both staff and students (63.1% & 60%). In another study done in a dental college showed very low level of experience in advanced skills, whereas in a study on osteopathic students, 46% of the students had overall advanced skills. The discrepancy in the usage between various studies could be due to the population of study as the dental and osteopathic students where these skill developments may not be a part of their learning or curriculum (2,13) Creative skills like designing the website was studied. Most of the staff and students were novice in this area. Both had answered questions like knowing 'how to design a website' and 'licenses to be applied for the same' very poorly (11).

The staff and students used internet for various academic and non-academic purposes. The students used internet for academic and non-academic purposes more than the staff. They used it for social communication media tools and networks as Whatsapp and facebook. (11). The students used it less often for academic purposes because of lack of awareness regarding the valid and reliable sources (2).

There is a need to mentor the students on the use of social media in a professional manner than to advise them against it (11). Faculty should be given formal training to support e-learning and enable a smooth transition from traditional methods of blended approach which includes traditional and e-learning methodologies (2).

## IV. LIMITATIONS:

This study involved students and staff of a single phase and in a single medical college. It tests only the knowledge about e-learning and not the attitudes. The findings may not be generalized to all the students.

## V. CONCLUSION:

Technology is here to stay. The staff and students have a good knowledge of technology. Facilities for implementation of technology should be provided by the organizations and for staff training. Proper planning and effective implementation into the medical curriculum shall benefit the graduates.

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| Type of Users | Staff | Students | p value |
|---|---|---|---|
| Basic | 23 (60.52%) | 58 (32.22%) | 0.001 |
| Intermediate | 12 (31.57%) | 97 (53.88%) | 0.012 |
| Advanced | 03 (7.7.89%) | 25 (13.88%) | 0.315 |

**Table 1: Level of computer literacy**

| Computer skill | Faculty (38) | Students (180) | p value |
|---|---|---|---|
| Internet usage | 38 (100%) | 180 (100%) | - |
| Word processing | 37 (97.3%) | 160 (88.8%) | 0.107 |
| Spreadsheets | 35 (92.1%) | 146 (81.1%) | 0.100 |
| Presentation software | 37 (97.3%) | 148 (82.2%) | 0.017 |
| Photo editing | 34 (89.4%) | 161 (89.4%) | 0.995 |
| Trouble shooting | 16 (42.1%) | 97 (53.8%) | 0.186 |
| Teaching software skills | 24 (63.1%) | 108 (60.0%) | 0.717 |
| Website maintenance | 09 (23.6%) | 73 (40.5%) | 0.051 |

**Table 2: Experience of faculty & students with various computer applications.**

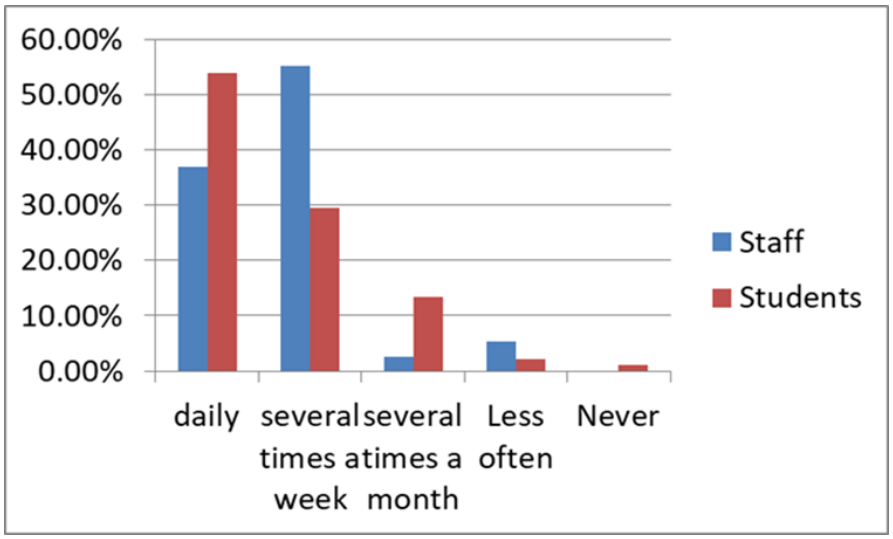


**Fig 1: Frequency of internet use academic purpose**

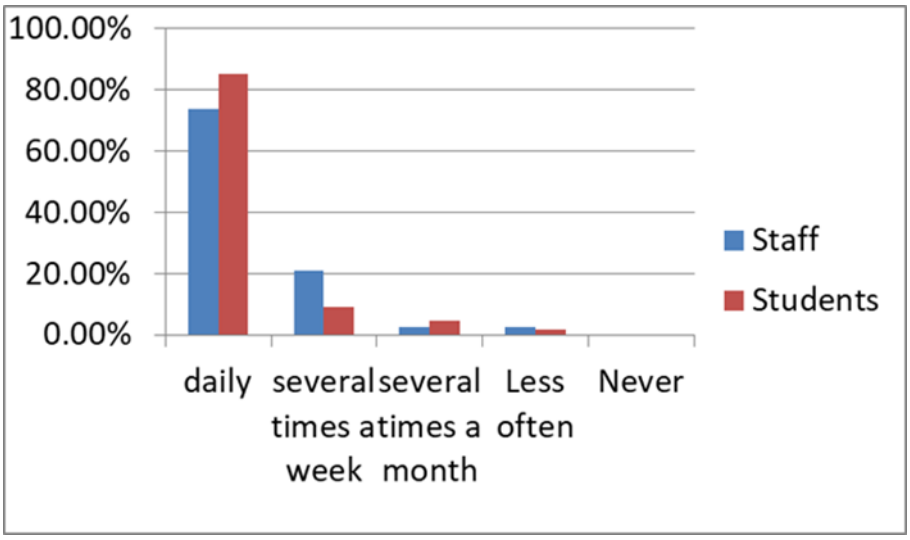


**Fig 2: Frequency of internet use non-academic purpose**