

Satisfaction among the Students on E-Learning under the Pandemic Situation

Dushan Kumarasinghe

Department of Computer Science and Engineering

University of Moratuwa

Moratuwa, Sri Lanka

dushan.21@cse.mrt.ac.lk

Abstract—E-Learning in Sri Lanka is under a big focus nowadays since almost all the students in each education groups (from preschools to post graduates programs) had to shift to e-learning. Covid19 pandemic causes this sudden change of education system in the country. Still there are a lot of issues in this sudden change because the country was not ready for such education system change. A survey was done to analyze the satisfaction among undergraduates of local universities. Satisfaction and preferences of the students were analyzed in the survey.

Index Terms—E-Learning satisfaction, Pandemic survey

I. INTRODUCTION

Sri Lanka has faced a huge shift of day to day task changes due to the Covid19 pandemic. Education system of the country is affected highly due to this. From preschool to universities education system had to move to e-learning. Most of the time they had to use e-learning for all events of the studies including exams and projects. As the country's education system all most all the time happened on-premises, this sudden change made a lot of issues and it became a big topic in the country. Coverage of internet providers and devices to connect to internet were huge problems. This study was done to analyze the satisfaction of e-learning among local university students. Dataset¹ and the outcomes of the survey is presented with this paper.

II. RESEARCH OBJECTIVES

Making statistical judgements on the satisfaction of e-learning among the undergraduates is mainly focused on the research.

Objectives of the research can be listed as below:

- Creating a sufficient data set for the evaluating e-learning satisfaction among undergraduates.
- Making statistical judgements based on the data.
- Presenting the outcomes and the conclusions of the research.

III. METHODOLOGY

For this study, we used google forms to collect data. Form was shared in social media networks and among student chat groups of the institutions. Form was made easy and short to easily answer expecting it will make the students to think and answer honestly without hurry.

We let students to rate e-learning as well as on-premise learning experiences and expected to compare the satisfaction of students on e-learning relative to on-premise learning. Internet connection issues, geographical and intuition wise dependencies were collected for comparative analyses of the dependencies.

IV. QUESTIONNAIRE

Questionnaire was consisted of the below questions for students to answer.

- 1) Where do you live?
- 2) Your institute?
- 3) How many modules are you following in the current academic semester?
- 4) How many modules are providing online lectures in the current academic semester?
- 5) Is your internet connection reliable during the lectures?
- 6) Have you faced online exams during the pandemic from home?
- 7) If your answer for above question is "Yes", Have experienced any troubles during the exam because of internet issues?
- 8) Are you satisfied about the interaction between students and the lecturer in e-learning?
- 9) Are you satisfied about the student group interaction in e-learning (group assignments/ group discussion/ group projects)?
- 10) Are you recording the lectures?
- 11) If answer for the above is "Yes", you won't be able to record the lectures if things get back to normal and start the universities. Do you worry about this?
- 12) Do you think e-learning is stressful?
- 13) Do you think on premise learning could reduce the stress?
- 14) Do you think e-learning cannot cover all the aspects of your studies?
- 15) Do you think e-learning is better than on premise learning?
- 16) Considering your requirements rate on premise learning (higher is better)
- 17) Considering your requirements rate e-learning (higher is better)
- 18) Have you got any comments?

¹<https://github.com/dushan14/stat-research-e-learning>

V. DATA

Data were collected into an excel sheet and 56 repos were collected from undergraduates from below cities.

- Gampaha
- Kalutara
- Colombo
- Jaffna
- Matara
- Galle
- Kurunegala
- Hambantota
- Kegalle
- Kandy
- Matale
- Trincomalee
- Anuradhapura
- Ratnapura

Fig. 1 shows the distribution of data district wise. We can notice that students in "Colombo" have a higher contribution to the survey.

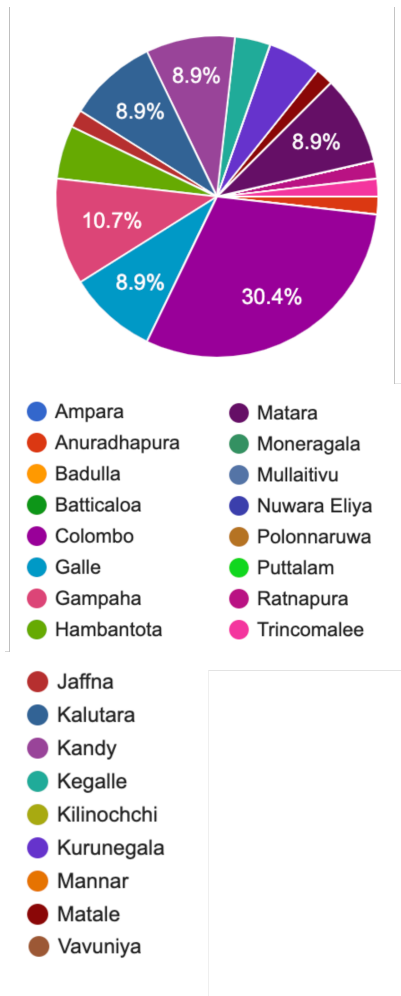


Fig. 1. District wise distribution

Students from below institutions were contributed for the study.

- University of Moratuwa
- University of Sri Jayewardenepura
- University of Colombo
- University of Kelaniya
- Sri Lanka Institute of Information Technology
- Uva Wellassa University
- General Sir John Kotelawala Defence University
- University of Jaffna
- Sabaragamuwa University
- University of Ruhuna
- NSBM

Fig. 2 shows the distribution of data university wise. we can notice that "University of Moratuwa", "University of Sri Jayewardenepura" and "Uva Wellassa University" have higher contribution to the survey.

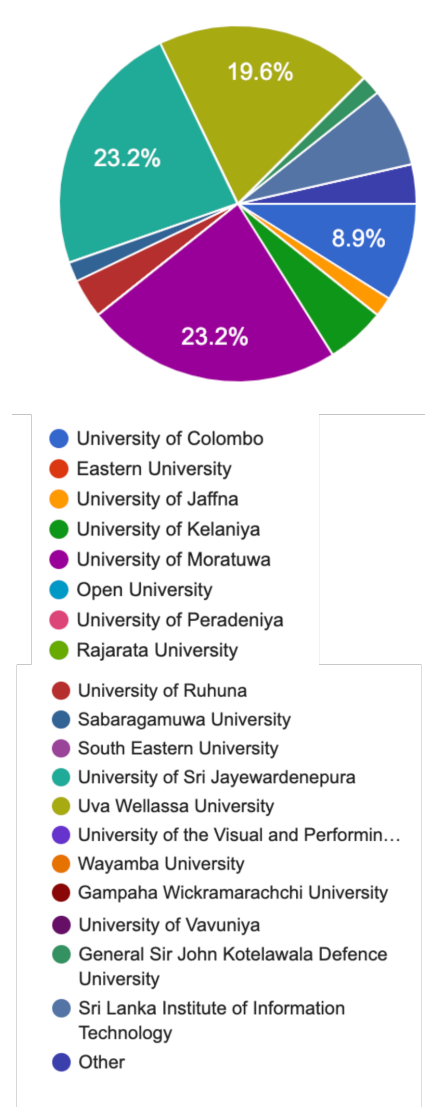


Fig. 2. University wise distribution

For the question "How many modules are you following in the current academic semester?" responses are shown in Fig. 3

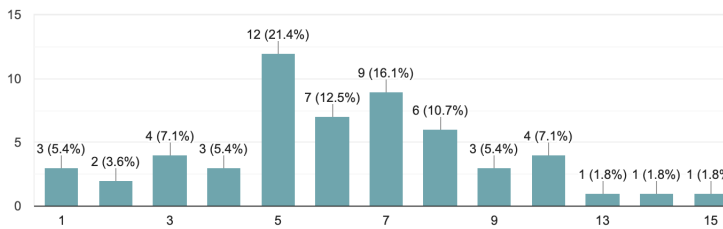


Fig. 3. Modules in current semester

For the question "How many modules are providing online lectures in the current academic semester?" responses are shown in Fig. 4

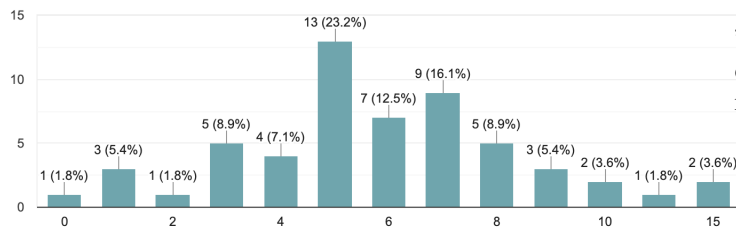


Fig. 4. Modules in current semester delivers with e-learning

Difference in Fig. 3 and Fig. 4 implies all the modules in the current semester are not cover through e-learning.

Since the internet connection plays a major role in e-learning, "Is your internet connection reliable during the lectures?" question was asked and the responses were as shown in Fig. 5

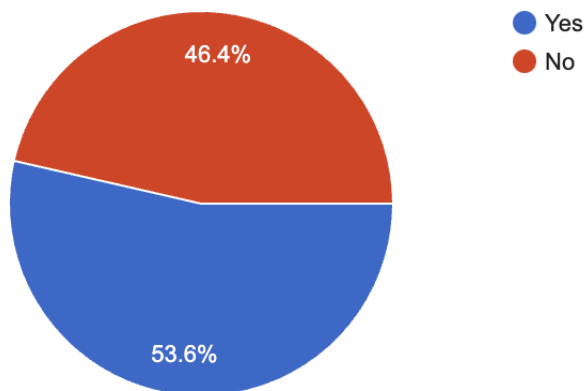


Fig. 5. Internet connection reliability

For the question "Have you faced online exams during the pandemic from home?" responses are shown in Fig. 6

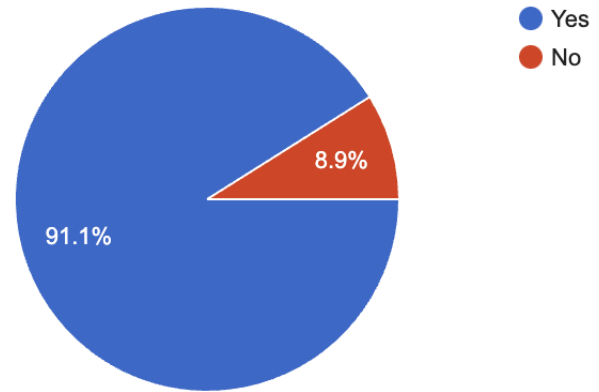


Fig. 6. Faced exams from home

For the question "If your answer for above question is "Yes", Have experienced any troubles during the exam because of internet issues?" responses are shown in Fig. 7. Out of 56 responses only 51 were answered this.

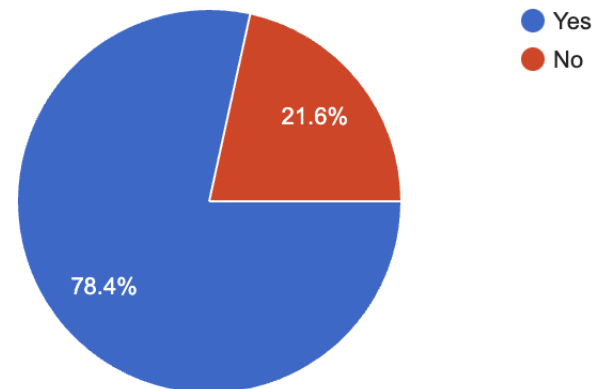


Fig. 7. Faced troubles in exams from home

For the question "Are you satisfied about the interaction between students and the lecturer in e-learning?" responses are shown in Fig. 8. Interaction between people could be a big concern in e-learning since students and lecturers had to change their everyday tasks into online platforms. Lecturers and students had to be familiar with the technology and had to face the issues and limitations.

For the question "Are you satisfied about the student group interaction in e-learning (group assignments/ group discussion/ group projects)?" responses are shown in Fig. 9.

For the question "Are you recording the lectures?" responses are shown in Fig. 10.

For the question "If answer for the above is "Yes", you won't be able to record the lectures if things get back to normal and start the universities. Do you worry about this?" responses are shown in Fig. 11.

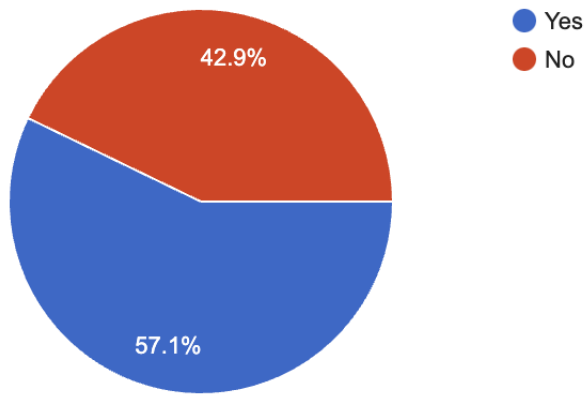


Fig. 8. Satisfied about the interaction between students and lecturers

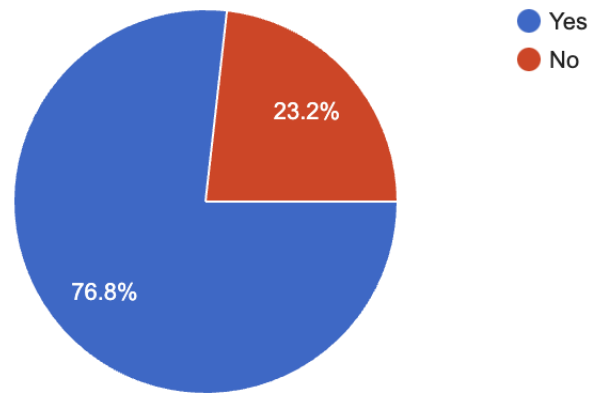


Fig. 10. Recording the lecture

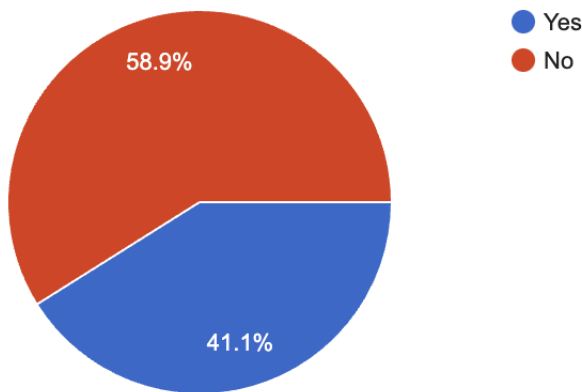


Fig. 9. Satisfied about the interaction between group work

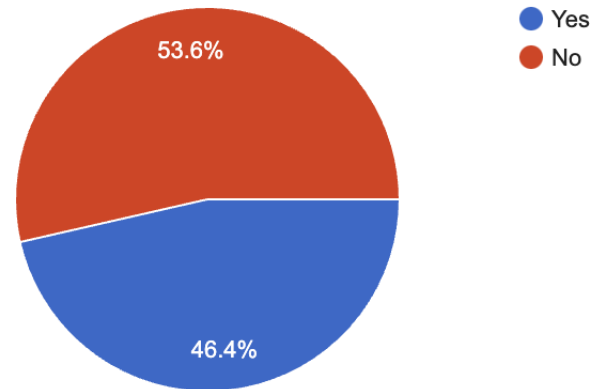


Fig. 11. Worrying about won't be able to record in on-premise learning

For the question "Do you think e-learning is stressful?" responses are shown in Fig. 12.

For the question "Do you think on premise learning could reduce the stress?" responses are shown in Fig. 13.

For the question "Do you think e-learning cannot cover all the aspects of your studies?" responses are shown in Fig. 14.

For the question "Do you think e-learning is better than on premise learning?" responses are shown in Fig. 15.

Finally ratings of both on-premise and e-learning were taken and Fig. 16 shows the answers for the question "Considering your requirements rate on premise learning (higher is better). Fig. 17 shows the answers for the question "Considering your requirements rate e-learning (higher is better)"

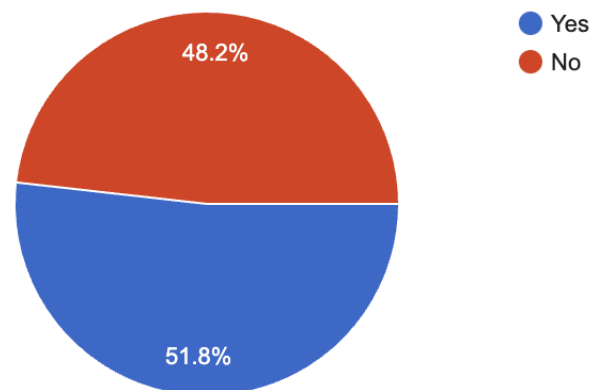


Fig. 12. Is e-learning stress full

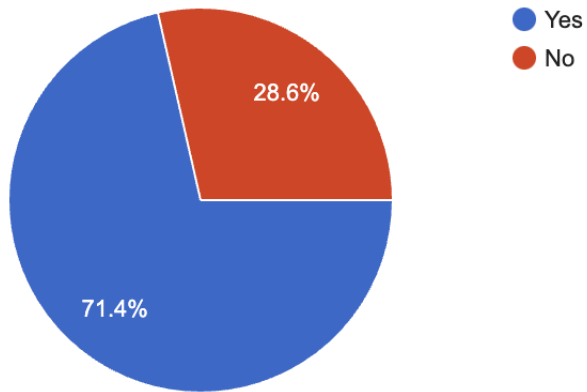


Fig. 13. Can on-premise learning reduce stress?

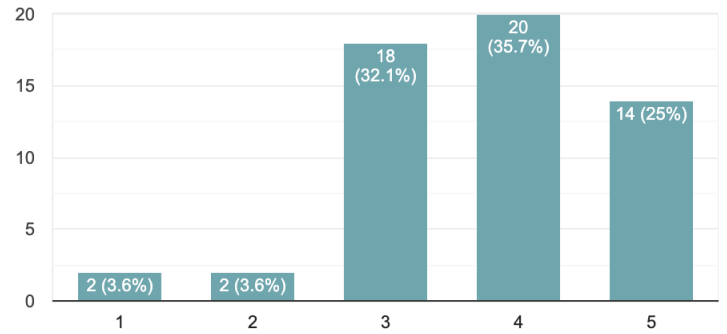


Fig. 16. Ratings of on-premise learning

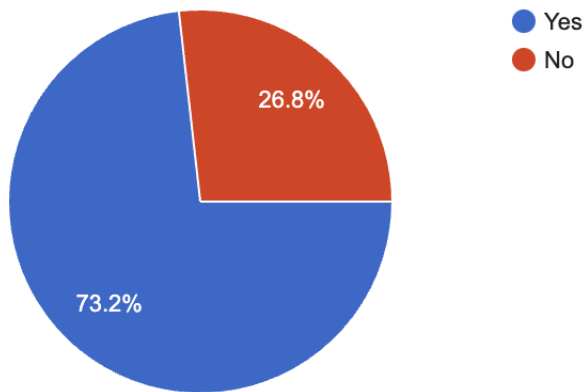


Fig. 14. Can't e-learning cover all aspects

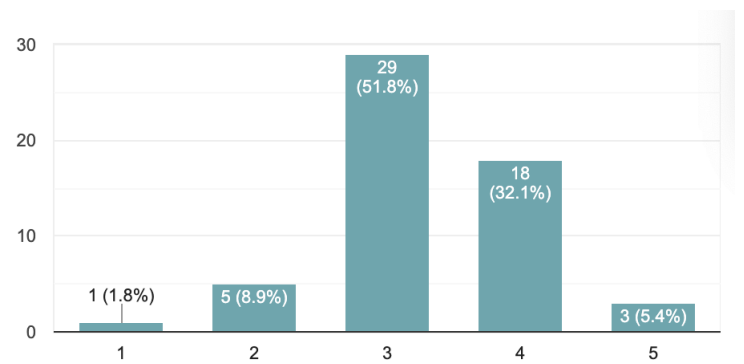


Fig. 17. Ratings of e-learning

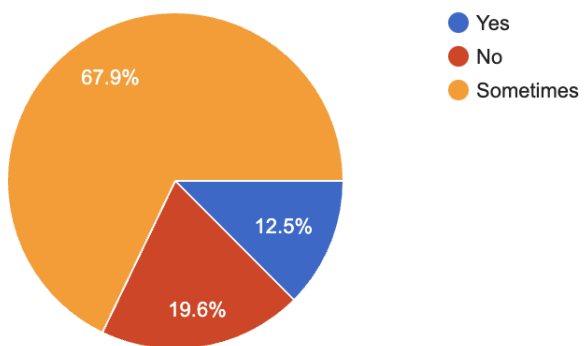


Fig. 15. Is e-learning better than on-premise learning

VI. ANALYSIS

Two hypothesis tests were done on the data answering these questions.

- 1) Does satisfaction of internet connection cause the satisfaction of e-learning?
- 2) Does preference of learning (e-learning vs On-premise) caused by the stress caused by e-learning?

Chi-square [1] test was used as the tool for the tests.

A. Test 1

In test one question "Does satisfaction of internet connection cause the satisfaction of e-learning?" was analyzed.

H_0 = There is no association between internet satisfaction and e-learning satisfaction.

H_1 = E-learning satisfaction has a association with internet satisfaction

TABLE I
ASSOCIATION BETWEEN INTERNET SATISFACTION AND E-LEARNING SATISFACTION

	E-learning satisfied	E-learning dissatisfied
Internet satisfied	24	6
Internet dissatisfied	17	9

Confidence interval (α) = 0.05

$X^2 = 1.5171$

DF = 1

P-Value = 0.2180 (>0.05)

Since p-value is greater than α , we do not reject H_0 and conclude that there is no significant evidence that the stated proportions are not right.

\Rightarrow No significant evidence to reject "No association between internet satisfaction and e-learning satisfaction"

B. Test 2

In test one question "Does preference of learning (e-learning vs On-premise) caused by the stress caused by e-learning?" was analyzed.

H_0 = There is no association between getting stressed by e-learning and preference.

H_1 = Preference has a association with internet satisfaction

Confidence interval (α) = 0.05

$X^2 = 4.4400$

DF = 2

P-Value = 0.1086 (>0.05)

Since p-value is greater than α , we do not reject H_0 and conclude that there is no significant evidence that the stated proportions are not right.

\Rightarrow No significant evidence to reject "No association between getting stressed by e-learning and preference"

TABLE II
ASSOCIATION BETWEEN STRESS AND THINKING E-LEARNING IS BETTER THAN ON-PREMISE LEARNING

	E-learning is better	E-learning is not better	E-learning is better sometimes
E-learning is stressful	5	8	16
E-learning is not stressful	2	3	22

VII. CONCLUSION

According to data we can say there is no association between internet satisfaction and e-learning satisfaction. Also we can say there is no association between getting stressed by e-learning and preference for e-learning than on-premise learning.

Considering data collection mechanism, which used volunteer data, these have volunteer bias. Also the dataset is not generalizable to whole Sri Lanka since the distribution of data has biased towards few districts and few universities. Future work for the research would be to correct those biases and collect more data that could be generalizable to whole country.

REFERENCES

- [1] K. L. Wuensch, *Chi-Square Tests*. Berlin, Heidelberg: Springer Berlin Heidelberg, 2011, pp. 252–253. [Online]. Available: https://doi.org/10.1007/978-3-642-04898-2_173