

Data Literacy- The Technology Proficiency among Higher Education Students

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Abstract: *In the present scenario development of society is depending up on quality of the research development of any area. Also phenomenon and evaluation are often related and represents as data. Thus manipulating and interpreting data from the view of research is highly relevant in modern society. We all know that education is the investment for future society. Studying about data literacy among young post graduate students is very significant towards progress of respective subject of that society. Data literacy plays a key role in developing knowledge of subject including science, arts, commerce and language. The aim of the study is to measure the level of data literacy by using Data Lietryacy Test on a sample of 600 students &result got that data literacy among students is avarage.*

Keywords: *Data Literacy, Data manipulation, Post Graduate Students.*

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I. Introduction

Educational research is scientific field of study that examine education and learning and the human attributes, interactions, organizations and instructions that shapes educational outcomes .The basic for each educational research is scientific method. Scientific method uses directed question and manipulation of variables to systematically find information about teaching learning experiences .In Kerala we have 100% percentage literacy. But Most of the people who are educated also lacking data literacy, digital literacy and information literacy etc

Literacy is the one of the prominent area in educational research. UNESCO defines literacy as” ability to identify, understand, interpret, create, communicate and compute using printed and written materials associated with various text”

II. Need of The Study

In present contexts ,data literacy has prominent role .It is the ability to comprehend, create and communicate data and is the first level of tri level literacy, fluency, mastery skills. Data literate people have the knowledge, understanding and skills to connect people to data. It is an essential ability required in the global knowledge base economy; the manipulation of data occurs in daily processes across all sectors and discipline. An understanding of how decision are informed by data, and how to collect, evaluate and apply this data in support of evidence –based decision making and will increasingly be required in knowledge economy jobs as data literacy spans both qualitative and quantitative data and is enabled by a broad range of data related capabilities and learning out comes. Even in everyday life, data collection can be important. For example we can see that Bakers often keep dairies when they are re learning how to bake a new type of biscuit. Gardeners keep a log about the growth of their gardens, and birdwatchers keep track of where and when they see what types of birds and what the weather condition where. Drivers keep track of vehicle message, and homeowners keep track of their electrical bill month to month.

Most of the people possess high qualifications. But they do not have enough ability to deal with more data. So it hinter them interpret and communicate by using large number of data, in various opportunities

We can find less research studies on data literacy especially in post graduate students. But this study provides a chance for knowing information about data literacy.

III. Theoretical Views

Michael Bowen and Anthony Bartley Said that “Data literacy is important For your students because data Are used to argue and persuade People to, among other things, vote For political agendas or lease a Car. An improved understanding of data practices means that better Questions can be asked”

American library association identified six significant themes to consider about data literacy which is given as follows

1. Statistical Literacy

Students must critically “read,” contextualize, and interpret raw and synthesized data. Discerning Correlation from causation; recognizing the difference in the meaning of mean, median, and Mode; understanding what margin of error signifies in polling data; and recognizing potential biases in collected data, among other skills, are critical for readings scholarly research, understanding arguments in popular media, and interpreting government documents.

For example: Statistics flood news articles, Face book feeds, and scholarly journals etc

2. Data Visualization

Having skills to create and comprehend mapped data, graphs, pie charts, and emerging forms of visualizations will help students effectively navigate visually rich information sets

3. Data in Argument

Our students can assemble random bits of factual data. However, it takes far more skill to Understand how data is used—both informational and persuasively— to support arguments in resources students examine, and then for students to create viable arguments themselves. These Arguments could take the form of statistics embedded as evidence in a research paper, shared charts and graphs with tweaked or non standardized elements, advertising, or info graphics.

4. Big Data and Citizen Science

More and more data is being collected, often without citizens’ knowledge, via frequent shopper Cards, step counters, social media, and more. Some data is life-saving, such as DIY systems that help parents monitor their children’s Type 1 diabetes by transferring insulin data temporarily and anonymously online .Careful human interpretation of big data is required for positive outcomes to be achieved.

One student-friendly entry point for interacting with big data is citizen science.

5. Personal Data Management

From Google’s personalized search results to Face book’s custom ads, students have daily experience, captured as their clicks and likes are converted into actionable data. While students might like seeing relevant ads or music recommendations that match their favorites, few know it is because of the breadcrumb trail they leave behind. Students may think the website CNN.com is serving up the news to them, but they are usually unaware that as many as fourteen bots are following their actions and converting their clicks into data

6. Ethical Data Use

Data is not inherently good or bad, but it can be framed, edited, manipulated, or otherwise Modified for unethical purposes

Data Literacy for Student Achievement

Data literacy plays important role in student’s achievements. Since the passage of the No Child Left Behind legislation (2001), school districts have used student assessment scores to track and report areas of strength

OBJECTIVE OF THE STUDY.

- To test whether there exist any significant difference in the level of students in post graduate level regarding the data literacy in the following sub samples
 - Subject of specialisation
 - Locale of the college

HYPOTHESIS OF THE STUDY.

- ✓ There will be significant difference in the level of data literacy among post graduate students on the basis of
 - Subject of specialization
 - Locale of the college

IV. Methodology.

A survey technique was adopted for the study.

Sample

For the present study 600 post graduate Students of arts and Science College, from Calicut district was selected as sample. The due representation was given to gender, subjects of specialization, locale of the college and type of management of schools.

Tool

Data literacy test include test items which prepared in accordance with five component of data literacy. This test consists of series of 50 items. Each questions has four choices as aoptions . The reliability of the tool found with Cronbachs alpha which is a statistical technique used to determining the internal consistency of the items. The value of Cronbachs alpha is .745 To ensure the face validity the investigator consulted experts in the area during the development of the tool and the tool was given to the experts for approval of items for testing data literacy among post graduate students. Thus ensured the face validity.

V. Analysis & Discussion.

The important statistical properties of the scores on the variable data literacy were analyzed as a preliminary step. The mean, median mode, standard deviation, skewness and kurtosis were calculated for total sample are in the table 1

Table 1
Mean, median, mode, standard deviation skewness and kurtosis for the total sample

Variable	N	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Date	600	23.76	24.00	25.00	6.31	-.167	-.442

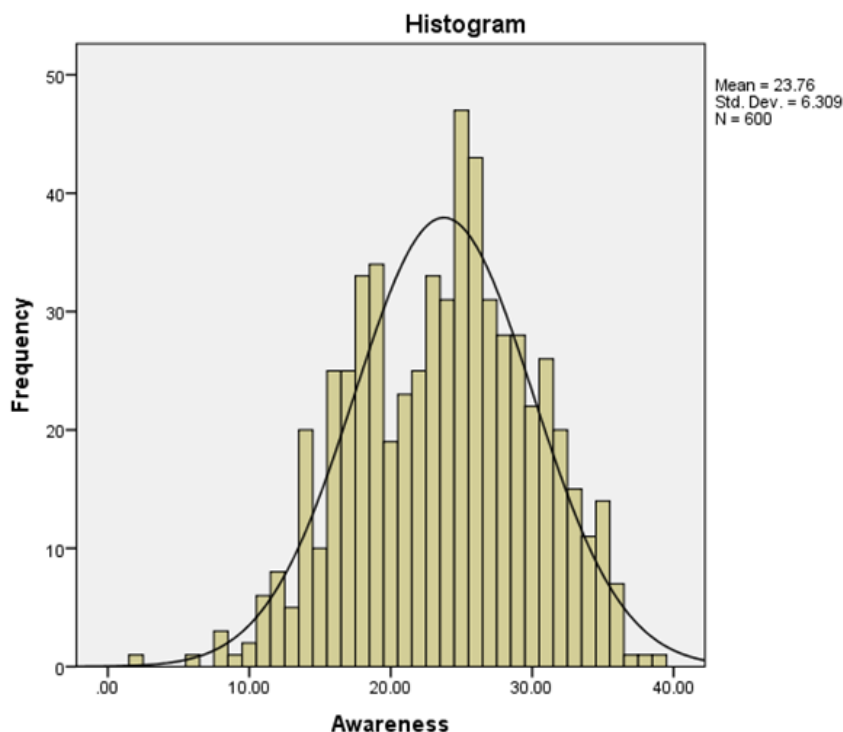


Figure 1. Histogram for preliminary analysis

Discussion of the result

Table shows that the values of mean, median, mode of variable data literacy for total sample are 23.76,36 and 37 respectively. These values are almost equal which shows the possibility of the variable to follow normal distribution. The obtained value of skewness is -.166 which means the distribution is negatively skewed. The value of kurtosis is -.442 which suggests that the above distribution is leptokurtic. The distribution of the variable data literacy is approximately normal

Major analysis

Extent of data literacy among post graduate student for the relevant sub samples based on locality

Table 2

Mean and percentile score of data literacy test among post graduate students based on locality

Mean Score		Percentiles	Score	
Rural	Urban		Male	Female
24.03	20.59	P ₁₀	16	14
		P ₂₀	18	16
		P ₃₀	20	18
		P ₄₀	23	19
		P ₅₀	25	20
		P ₆₀	26	22
		P ₇₀	27	24
		P ₈₀	29	25
		P ₉₀	33	27

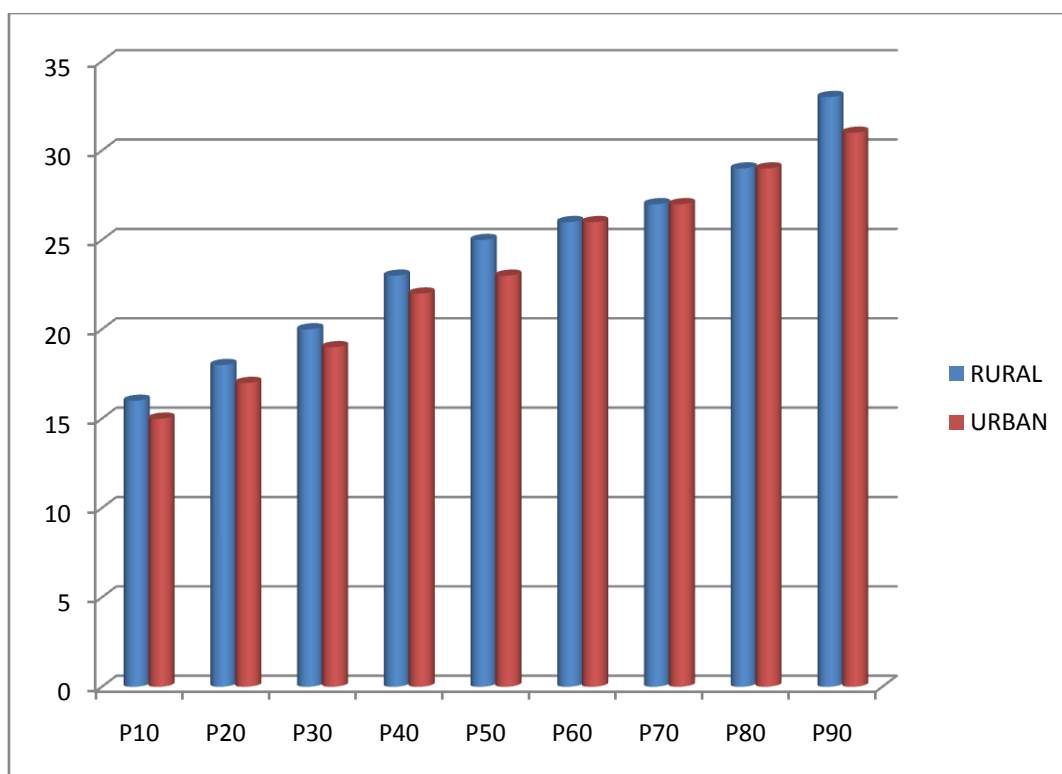


Figure 2 Graphical representation of data literacy among post graduate student for the relevant sub sample locale of the college

Discussion of The Result

The obtained mean for rural and urban post graduate students in the data literacy test is 24.03 and 20.59. From the table, the 50th percentile of the scores of data literacy test for rural and urban post graduate students is 25 and 20. This mean 50 percent of rural and urban when post graduate students in below the score 25 and 20 respectively similarly, we can interpret other percentiles

Extent of data literacy among post graduate student for the relevant sub samples based on subject of specialization

Table 3

Mean and percentile score of data literacy test among post graduate students based on subject

Mean Score				Percentiles	Score			
Science	Arts	Commerce	Language		Science	Arts	Commerce	Language
				P ₁₀	21	14.2	15.10	14
				P ₂₀	24	18	17	16
				P ₃₀	25	19	19.3	18
				P ₄₀	26	20	22	19
27.58	21.67	23.76	20.59	P ₅₀	27	22	25	20
				P ₆₀	29	24	27	22
				P ₇₀	31	27	29	24
				P ₈₀	33	26	30	25
				P ₉₀	35	29	32	27

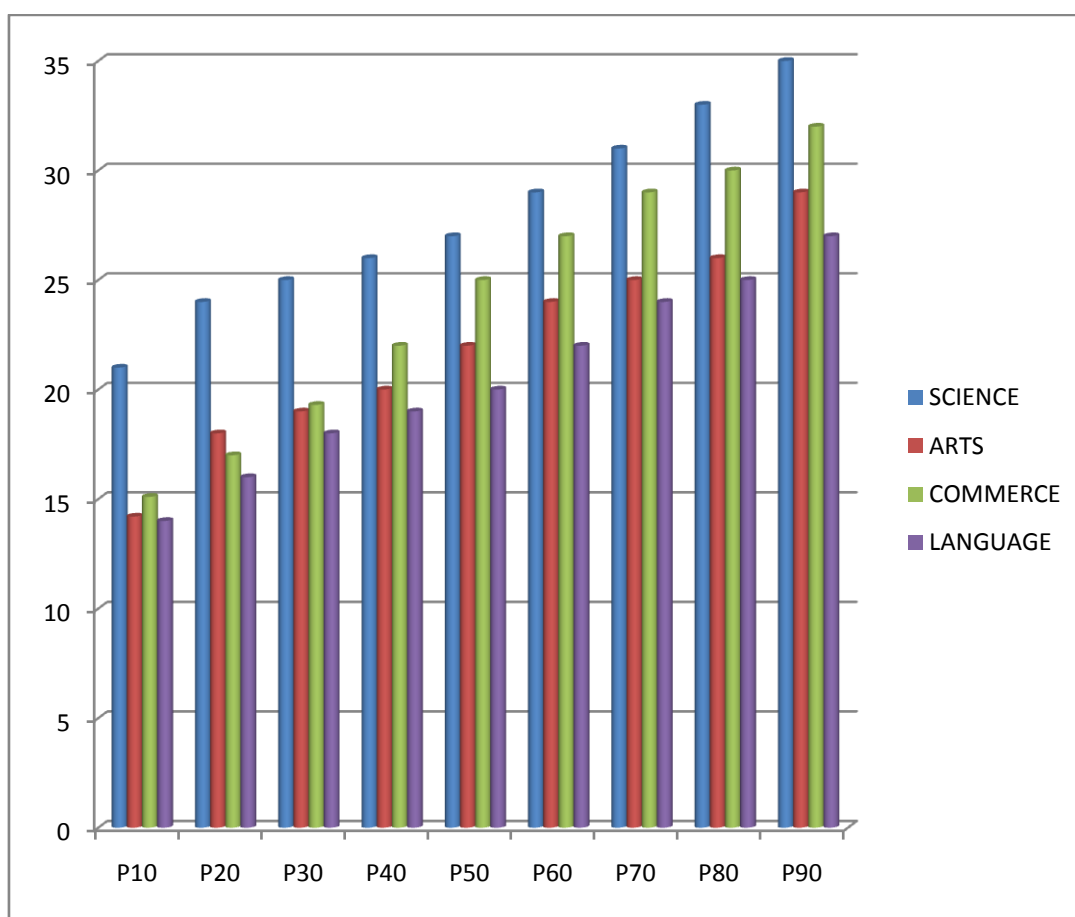


Figure 3. Graphical representation of data literacy among post graduate student for the relevant sub sample based on subject

Discussion of the result

The analysis procedure estimated Data literacy based on subject of specialization and categorized them in to three categories viz, science, arts, commerce and language. Score greater than neutral value consider as data literate. It is inferred from the table that science students have data literacy than arts, commerce, language students. The table also reveals that 10th percentile of the scores of data literacy test among post graduate students from science ,arts, commerce ,language are 21,14.2,15.10,14 respectively .This mean that only 10

percent of post graduate students from science, arts ,commerce ,language lie below the score 21,14.2,15 and10,14 respectively and 90 percent lie above that score. Similarly we can interpret other percentiles

VI. Findings

- ✓ The mean score obtained for the data literacy test is less than neutral value which means that extent of data literacy among post graduates are not satisfactory to certain extent
- ✓ Extent of data literacy for urban and rural post graduate students shows that rural college students possess more data literacy than urban colleges
- ✓ Extent of data literacy among post graduate students based on subject , from science ,arts, commerce and language is 27.58, 21.67, 23.76 , 20.59 .It reveals that science students possess more data literacy than other subjects. language students and arts students have minimum level of data literacy
- ✓ Based on locale of the college data literacy among post graduate students did not differ significantly (t: 1.419).It implies that there no significant difference between rural and urban post graduate college students in their data literacy score.

VII. Conclusion

Extent of data literacy among post graduate students are not satisfactory to certain extent. Based on locale of the college, post graduate students did not differ in their level of data literacy. Rural college students possess more data literacy than rural post graduate students

VIII. Educational Implication

- The result of analysis shows that data literacy among post graduate students is satisfactory to certain extent. Hence importance should be given to include the concept of data literacy in the curriculum for upgrading data literacy capacity of college students
- The rural college students possess more data literacy than urban college students. So environment should change, among urban students for improving data literacy level
- Include content, problems and situation relating to the data calculation in the curriculum
- Conduct quiz programme in a competitive way to make awareness about data analysis method.

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