



Utilization of Digital Tools: Critical Analysis of College and University Professors in Tamilnadu

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

It is generally known that digital technologies play an important role in the digital age. Hence, there is a need to close the gap in digital device accessibility and expand opportunities to access technology to create equality. However, this creates a significant problem: students' failure to understand how to use such technology in the learning process. The adoption of online-based learning and the Internet has had a positive impact on students and faculties [1].

The present study aims to analyze the level of utilization of digital tools by college and university professors in Tamilnadu. This study designed a survey method with simple random sampling from the selected population. The investigator prepared and standardized a digital utilization scale to assess the level of utilization of digital tools by the professors of colleges and universities. The percentage analysis, 't-test, ANOVA, and Pearson Product Moment correlation were made for this study. The findings of the study were: 1. There will be a significant outcome in the utilization of digital tools by college and university professors concerning question-wise. 2. There will be a

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significant interaction in the utilization of digital tools of college and university professors concerning the teaching experience. 3. There will be a significant interaction in the utilization of digital tools between college and university professors concerning the designation. The study demonstrated that the utilization of digital tools is very essential for today's technological world. So, the government, curriculum framers, private NGOs and stakeholders must give more priority to these digital tools in the future.

Keywords: Digital tools; G-mail; moodle; e-books; html5 flipbook; OBS studio.

1. INTRODUCTION

Utilization of digital tools represents the ability to use information and communications technologies safely and critically for work, both on a personal as well as on a social level. Digital literacy is about being able to make sense of digital media. This occurs through meaningful and sustainable consumption and curation patterns that improve an individual's potential to contribute to an authentic community. This includes the ability to analyze, prioritize, and act upon the countless digital media 21st-century citizens encounter daily. Digital literacy means to live, learn and work in a digital society. A digitally literate person should possess both digital skills and knowledge to use computer networks, engage in an online community, and understand the societal issues which are raised by digital technologies [2].

Phuapan et al. [3] noted that digital literacy is the most important skill in utilizing technology, a communication tool to access, organize, coordinate, estimate, and provide information in society. According to the American Library Association's task force, "Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills."

Gilster [4] further defined digital literacy as "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers" (p. 1).

The view of digital literacy offered by Jisc [5] is even more comprehensive, defining digital literacy as "the capabilities which fit someone for living, learning and working in a digital society" (para. 3).

In 1997, this concept appeared in a book entitled Digital Literacy, in which the author defined digital literacy as the ability to comprehend and apply various forms of information science from

several sources to present information on the computer. Later, in 2005, Gilster suggested a more complete definition. He defined digital literacy as the individual realization, attitude, and capacity of digital tools used to access, manage, integrate, analyze, and synthesize digital information sources. This includes generating new knowledge and producing many forms of digital media to communicate, create and reflect the concepts within other daily life situations.

1.1 Need and Significance of the Study

Imparting education online is not new. The world is undergoing rapid change, and for almost a decade, the digitalization of all sectors is being emphasized. The education sector was also revamped in light of the newfound knowledge and has been a boon to many. A smart blend of online and offline teaching can help in bridging the digital divide. With the growing use of smartphones by all categories of people, mobile-based learning can also help in serving as a tool to provide digital literacy [2].

The definition of computer literacy has evolved as technology improved and society became more dependent on computers. Some 50 years ago when a computer nearly filled a room, computer literacy meant being able to program a computer [6]. Today, when every user holds a computer, computer literacy is defined as an understanding of computer characteristics, capabilities, and applications, as well as an ability to implement this knowledge in the skillful, productive use of computers in a personalized manner [7]. Terms such as computer competency, computer proficiency, and computer literacy are used interchangeably [6].

We are living in a constantly evolving digital era. Present students also called 'Digital Natives' grow up using technology like computers, the internet, and mobile phones constantly from their early years of life. Due to this early exposure to technology, students today think, communicate, seek help, learn, and access information

differently. For this reason, it has been observed that digital natives need to be taught in a fundamentally different way. Learners get accustomed to using technology to solve most repetitive tasks in much easier ways, which earlier formed the basis of traditional learning. Hence, it is inevitable for educators to move from traditional teaching methods to more innovative and techno-enhanced teaching and learning [8-10].

The above discussion indicated the role of today's teachers and professors to acquire and manipulate the right technologies in his/her classroom. Compared to the school education system the higher education system students are more individualized to learn his/her own pace. So, the awareness of technology, practice of technology, and utility of technology are very crucial for teachers and professors. In this view, the investigator prepared themselves to analyze the utilization of digital tools for college and university professors in Tamilnadu.

1.2 Title of the Study

The present study is entitled "*Utilization of Digital Tools: A critical analysis of College and University Professors in Tamilnadu*".

1.3 Operational Definitions of the Terms to be Used

1.3.1 Digital literacy

According to Walkme Glossary Digital tools (DT) can be defined as programs, websites, applications, and other internet and computerized resources that facilitate, enhance and execute digital processes and overall digitization efforts.

1.4 Objectives

1. To find out the reliability of the utilization of digital tools questionnaire.
2. To find out the utilization of digital tools of college and university professors concerning question-wise.
3. To find out the utilization of digital tools by college and university professors concerning teaching experience.

4. To find out the utilization of digital tools by college and university professors concerning the nature of affiliation.

1.5 Hypotheses

1. There will be a significant outcome in the utilization of digital tools by college and university professors concerning question-wise.
2. There will be a significant interaction in the utilization of digital tools by college and university professors concerning the teaching experience.
3. There will be a significant interaction in the utilization of digital tools between college and university professors concerning the designation.

2. METHODOLOGY

The present study intended to analyze the level of utilization of digital tools by college and university professors. The investigator planned to conduct a normative survey method for collecting data from the population. The population of the present study is professors, those who are working in colleges and universities located throughout Tamilnadu. Stratified random sampling technique to be used for data collection to the targeted population.

2.1 Analysis

1. To find the reliability of utilization of digital tools scale for professors of colleges and universities.

The Table 1 displays the reliability of the utilization of digital tools scale for professors of colleges and universities. The Cronbach's alpha score for unstandardized items is 0.885 and the alpha score for standardized items is 0.880. It specifies that the scale was highly reliable and valid for the assessment of the utilization of digital tools for professors of colleges and universities.

The Table 2 shows that item-wise Cronbach's alpha score for items standardization. Item number 1 and 2 were eliminated based on Cronbach's alpha score and finally, 23 items were retained for the final form of utilization of the digital tools scale.

Table 1. Reliability statistics

Cronbach's Alpha	Cronbach's Alpha based on Standardized Items	No. of Items
.885	.880	25

Table 2. Item total statistics

S. No	Utilization of Digital Tools Statements	Cronbach's Alpha if Item Deleted
1	Do you know G-mail applications?	.886
2	Do you practice Google Classroom?	.886
3	Do you use Google spreadsheet?	.883
4	Do you create Google forms for educational survey/webinar data collection?	.883
5	Do you generate e-certificate through Google form add-on features?	.882
6	Do conduct classes through the Edmodo application?	.878
7	Do you have an account in Mendeley?	.879
8	Do you register for any courses in the Swayam portal?	.885
9	Do you complete online courses through Swayam/Coursera?	.884
10	Do you attend Moodle training program?	.879
11	Do you read dissertations/Thesis in Shodhganga infliib.net?	.882
12	Do you conduct classes through Moodle Platform?	.877
13	Do you download e-books from the pdf drive web page?	.884
14	Do you create educational videos through mobile applications?	.880
15	Do you create video lessons through OBS studio?	.876
16	Do you create video lessons through presentation tubes?	.877
17	Do you convert your PowerPoint presentation into a video?	.881
18	Do you have an Orchid id?	.878
19	Do you preserve your publications (Articles & Books) in the Html5 flipbook?	.876
20	Do you have your own Google web page?	.879
21	Do you conduct online classes through Google Meet?	.884
22	Do you search class notes in Google?	.885
23	Do you assist technology in your class assessment?	.882
24	Do you know Mentimeter?	.877
25	Do you use Google Calendar?	.884

The Table 3 indicates that the 'F' value of the utilization of digital tools scale is 62.671, it implies that the inter contingencies of the utilization of digital tools scale items were good and valid.

The Table 4 demonstrates the level of utilization of digital tools by professors of colleges and universities in each item. The percentage analysis showed that the level of utilization of digital tools of professors of colleges and universities were satisfactory among the use of Google Classroom, downloading e-books from the pdf drive web page, converting powerpoint presentation into a video, conducting online classes through Google Meet, searching content from web pages, use of technology assistant in

classroom teaching and use of Google calendar. The items like conducting classes through the Edmodo application, conducting classes through Moodle Platform an account of Mendeley, creating video lessons through OBS studio, having an Orchid id, preserving publications (Articles & Books) in the Html5 flipbook, having an own Google web page and knowledge about Mentimeter.

The Table 5 reveals that there is no significant difference in the teaching experience of professors of colleges and universities regarding their utilization of digital tools, the calculated 't' value of 0.401 is less than the table value at a 5% level of significance.

Table 3. ANOVA

		Sum of squares	df	Mean square	F	Sig.
Between People		228.447	175	1.305	62.671	.000
Within People	Between Items	225.000	24	9.375		
	Residual	628.280	4200	.150		
	Total	853.280	4224	.202		
Total		1081.727	4399	.246		

Table 4. Percentage of college and university professors' utilization of digital tools level

S. No	Digital literacy statements	Nature of response	Number of respondent	Percentage	Level of utilization of digital tools
1	Do you know G-mail applications?	Yes	165	93.8	Satisfactory
		No	11	6.3	
2	Do you practice Google Classroom?	Yes	164	93.2	Satisfactory
		No	12	6.8	
3	Do you use Google spreadsheet?	Yes	103	58.5	Moderate
		No	73	41.5	
4	Do you create Google forms for educational survey/webinar data collection?	Yes	111	63.1	Substantial
		No	65	36.9	
5	Do you generate e-certificate through Google form add-on features?	Yes	107	60.8	Substantial
		No	69	39.2	
6	Do conduct classes through the Edmodo application?	Yes	52	29.5	Low
		No	124	70.5	
7	Do you have an account in Mendeley?	Yes	53	30.1	Low
		No	123	69.9	
8	Do you register for any courses in the Swayam portal?	Yes	123	69.9	Substantial
		No	53	30.1	
9	Do you complete online courses through Swayam/Coursera?	Yes	88	50	Moderate
		No	88	50	
10	Do you attend Moodle training program?	Yes	82	46.6	Average
		No	94	53.4	
11	Do you read dissertations/Thesis in Shodhganga inflib.net?	Yes	86	48.9	Average
		No	90	51.1	
12	Do you conduct classes through Moodle Platform?	Yes	58	33	Low
		No	118	67	
13	Do you download e-books from the pdf drive web page?	Yes	140	79.5	Satisfactory
		No	36	20.5	
14	Do you create educational videos through mobile applications?	Yes	112	63.6	Substantial
		No	64	36.4	
15	Do you create video lessons through OBS studio?	Yes	60	34.1	Low
		No	116	65.9	
16	Do you create video lessons through presentation tubes?	Yes	84	47.7	Average
		No	92	52.3	
17	Do you convert your powerpoint presentation into a video?	Yes	126	71.6	Satisfactory
		No	50	28.4	
18	Do you have an Orchid id?	Yes	39	22.2	Low
		No	137	77.8	
19	Do you preserve your publications (Articles & Books) in the Html5 flipbook?	Yes	59	33.5	Low
		No	117	66.5	
20	Do you have your own Google web page?	Yes	58	33	Low
		No	118	67	
21	Do you conduct online classes through Google Meet?	Yes	149	84.7	Satisfactory
		No	27	15.3	
22	Do you search class notes in Google?	Yes	164	93.2	Satisfactory
		No	12	6.8	
23	Do you assist technology in your class assessment?	Yes	133	75.6	Satisfactory
		No	43	24.4	
24	Do you know Mentimeter?	Yes	61	34.7	Low
		No	115	65.3	
25	Do you use Google Calendar?	Yes	155	88.1	Satisfactory
		No	21	11.9	

Table 5. Mean score difference between utilization of digital tools of college and university professors concerning teaching experience

Teaching Experience	Mean	SD	't' Value	Significance
Below 10 Years	14.250	5.9412	0.401	.689
11 Years and Above	14.598	5.5233		

Table 6. Mean score difference between utilization of digital tools of college and university professors holding a position

	Sum of Square	Df	Mean Square	F	Sig.
Between Groups	340.712	4	85.178	3.712	.032
Within Groups	5370.469	171	31.406		
Total	5711.182	175			

The Table 6 exhibits that there is a significant difference among the professors of colleges and universities holding the position of assistant professor, associate professor, and professor grade, the calculated F value of 3.712 is higher than the table value at a 5% level of significance.

3. RESULTS

1. The scale of the utilization of digital tools for professors of colleges and universities was highly reliable and valid for the assessment.
2. The level of utilization of digital tools by professors of colleges and universities was above average.
3. There is no significant difference in the teaching experience of professors of colleges and universities regarding their utilization of digital tools.
4. There is a significant difference among the professors of colleges and universities holding the position of assistant professor, associate professor, and professor grade.

4. DISCUSSION AND INTERPRETATION

In this present study, the investigator develop and validated the scale of the utilization of digital tools for professors of colleges and universities. The findings of the present study exposed that the utilization of digital tools is highly reliable and valid. In the present technological scenario, college and university professors should be aware of them the utilization of digital tools for their teaching. This scale could help them to assess themselves to their digital knowledge. In this present investigation, the investigator found that the level of utilization of digital tools by professors of colleges and universities was

above average. The reason behind that, the pandemic situation can create teaching-learning processes in the online platforms. And this conducive situation can personalize everyone should use digital tools in their daily routines. Mostly the teaching-learning process depend ons the digital platform for their sustainability to complete their academic activities. The present study also found that there is no significant difference in the teaching experience of professors of colleges and universities regarding their utilization of digital tools [11-13]. The reason behind that, is digital tools are universal so, there are no partiality and restrictions to use digital technologies based on their experience. Furthermore, the study found that there is a significant difference among the professors of colleges and universities holding the position of assistant professor, associate professor, and professor grade. Because the digital tools are not only used for teaching, it also useful for conducting webinars, scholars viva voce examinations, administrative meetings, and academic conversations between the higher officials to the office assistants.

5. CONCLUSION

The universalization and sustainability of the teaching learning process are fully dependent on digital technologies. From KG to higher education the classroom environment is fully furnished by technology hardwares for its success. Also, it creates techno friendly generation in the future. In the classroom, the students and teachers interact with each other with the same concepts and the teachers could act as a mentor for nourishing the content. So, it's the right time to wake up everyone to be aware and learn digital tools for their routines and profession.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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