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Enhancing Teachers' Proficiency through Digital Leadership and Technology-Based Professional Development Programs in Karachi Universities

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Abstract

The present paper has an objective to examine how digital leadership influences the proficiency of teachers with the help of technology-based training in the institutions of higher learning in Karachi. Digital transformation has contributed to a fundamental transformation in the teaching practices, instruction and the ways of professional development in higher education in the modern educational context. The aim of the study was to examine how digital leadership practices are related to teacher proficiency, and the impact of technology-based training on developing digital competencies of teachers and teaching efficacy. The research paradigm adopted was positivist and the research design was a survey research design to gather quantitative data on workforce among faculty members of both public and private universities in Karachi. The main data collection tool was a structured questionnaire with a 5-point Likert scale. A stratified random sample of 390 teachers was chosen to enable representation of the different academic disciplines and sectors of the institutions. Statistical Package of Social Sciences (SPSS) was used to analyze the collected data and the descriptive statistics, t-test, Anova, Pearson correlation, and regression analysis were done. The research results showed that there was a strong positive correlation between digital leadership and the proficiency of the teachers. The findings also showed that technology-integrated training has a positive impact on the digital skills, classroom behaviors and confidence of teachers to use educational technologies. Regression analysis indicated that digital leadership is a powerful predictor of the proficiency of teachers and technology-integrated training increases the effectiveness of leadership practices in higher education institutions. The research finds that digital leadership and ongoing training that is technological in nature is needed to enhance the competence of teachers and facilitate digital transformation within higher education. The study offers some useful implications on educational leaders, policy makers and university administrators in coming up with sustainable digital learning settings and programs in professional development.

Keywords: Enhancing, Teachers' Proficiency, Digital Leadership, Technology-Based, Professional Development Programs, Karachi, Universities.

Introduction

Education is one of the aspects of life that has been experiencing digital change. Colleges and Universities in Pakistan now employ the use of tools such as Zoom, Google Meet and online classes. However, the most significant change is the change brought by digital leadership, particularly, educating teachers on how to utilize technology. Big changes are being witnessed in the colleges of Karachi, the largest city of Pakistan. This paper examines the role of digital leadership in assisting

educators to become more effective in their work. Digital leadership implies that school leaders apply technology to enhance teaching and learning, and also to manage the school in a better manner. It involves goal-setting, acquisition of appropriate technology, establishing a culture that is digital friendly and resource management. Shah, Khan, and Ahmed (2021) also believe that education leaders today should be digital leaders. According to Ali, Shah, and Ullah (2020), four things are important in becoming a successful digital leader, namely, the familiarity with digital tools, their effective use in teaching, assistance in improving teachers, and motivation to embrace the use of technology.

1.1 Background and Significance

Teachers had nothing to do but go online when COVID-19 struck. That was a wakeup call that digital leadership is important. Nevertheless, there are numerous colleges and universities in Pakistan that do not have clear digital objectives and management. Technology in education requires teachers to be familiar with its use. That does not only involve using devices but also creating and conducting classes online. Blended learning is currently being provided in some Karachi colleges to assist teachers to develop these competencies (Riaz & Baig, 2022). Still, how well these trainings work depends on digital leadership. Teachers grow better with the help of leaders who promote continuous learning, supply materials, and encourage new ideas. In the absence of effective digital leadership, teachers might be resistant to change, the training will not be effective, and technology will not be utilized, which will negatively impact the quality of education (Ahmed and Anwar, 2021). The issues of Karachi colleges and universities are genuine: bad internet connection, the absence of current equipment and applications (Khan, Ali, and Farooq, 2023), and uncooperative teachers due to their inability to use digital technologies or being scared of the unknown (Nawaz and Kundi, 2020). Secondly, technology is continuously evolving, and leaders are finding it difficult to keep up (Shahid, 2021). Good digital leaders have clear objectives, distribute resources, and facilitate creativeness. In Karachi, certain colleges and universities have IT learning centers that assist teachers to utilize tech more effectively (Iqbal and Saeed, 2021). With Pakistan facing inflation, poverty, poor infrastructure, and gender disparities, digital leadership is a significant issue in transforming education. Leaders that foster teamwork and knowledge-sharing contribute to the creation of a peer learning and positive change culture (Javed & Rehman, 2022). This study looks at how digital leadership affects teacher training in Karachi's higher education institutions. Digital leadership is gaining significance as Pakistan strives to adapt to the changes in the world. Good leadership results in good teachers and good education. Further studies should be conducted on the best approaches to digital leadership in Karachi. Currently, numerous colleges and universities provide tech training to teachers, yet, unless digital leaders are present, these courses do not work. Issues such as ineffective tech installation, instructor opposition, and absence of development plans come in the way. Consequently, educators are under skilled and unconfident in using technology.

1.2 Objectives

It consists of

a) General Objective:

The overall aim of the research is to Enhancing Teachers' Proficiency through Digital Leadership and Technology-Based Professional Development Programs in Karachi Universities.

b) Specific Objectives:

i. To test the importance of digital leadership in creating and conveying a clear vision of technology integration within institutions of higher education.

ii. To explore the relation between teacher attitudes and their demographic factors in improving educational outcomes.

iii. The research question is to determine the applicability of technology integration training on higher education teachers.

iv. To explore the accessibility and access to digital resources and infrastructure by teachers in

institutions of higher learning.

v. Determining the obstacles and problem in institutional culture that could be impediments to the successful use of technology in education.

1.3 Research Hypothesis

•**H_{01}**: There is no significance difference between the mean digital leadership, teachers' proficiency and technology-integrated training among male and female teacher digital competencies in higher education

•**H_{11}**: There is a significance difference between the mean digital leadership, teachers' proficiency and technology-integrated training among male and female teacher digital competencies in higher education

H_{02}: There is no relationship between age, teaching experience and final academic qualification with digital leadership, proficiency and integrated training programs of teachers.

•**H_{12}**: The interaction of age, teaching experience and last academic qualification has an impact on digital leadership, teachers' proficiency and integrated training programs

•**H_{03}**: There is no significance association of digital leadership, teachers' proficiency and the technology integrated programs

•**H_{13}**: There is a significance association of digital leadership, teachers' proficiency and the technology integrated programs

2 Literature Review

2.1 Introduction

College and universities are increasingly applying more technology in their teaching and learning and in their day to day activities. It is becoming a norm to have blended classes, hybrid classes and fully online classes. The change implies that institutions must have powerful leadership that would assist teachers in keeping pace and enhancing their abilities. The concept of digital leadership has been vital in determining the quality of the training programs in the learning of teachers on how to utilize technology. In Karachi, digital changes in higher education sped up a lot after COVID-19. Universities have become more demanding on their teachers not only to have knowledge on their subjects but also to be proficient with digital tools. This puts leaders under pressure to stimulate new ideas, continuous training, and use of technology among the faculty.

2.1 Digital Leadership in Higher Education

Digital leadership implies that school leaders are smart with technology and can use it to enhance teaching, learning, communication, and the way the institution operates. According to the recent studies, digital leaders influence the culture of the school by creating an environment of collaboration, innovation, and lifelong learning in the environment that is rich in technology (Bond et al., 2021).

Being a digital leader does not merely entail possessing tech knowledge. It is all about possessing a clear vision, change management, and getting teachers to be familiar with digital tools. Digital leaders in higher education will be required to:

- Foster technology-friendly learning.
- Arrange teacher training and development
- Make certain that there is digital infrastructure.
- Encourage new ways of teaching
- Online and blended learning systems.

Researchers around the world have demonstrated that colleges and universities that lead in the digital sphere are more likely to have greater involvement of teachers in training and improved utilization of technology in the classrooms (UNESCO, 2021).

2.2 Transformational Leadership and Digital Education

Digital leadership in education can also be well described with the concept of transformational leadership (Burns, 1978; Bass, 1985). Recent research has attributed this type of leadership to effective digital change in colleges.

There are four components of transformational leadership:

2.2.1 Leading by Example

These leaders are role models. Teachers will emulate school leaders who are using and promoting technology. Studies indicate that leaders who are sincere about digital innovation get teachers to embrace the use of technology in teaching (Karakose et al., 2021).

2.2.2 Inspiring Others

These leaders establish a common objective of development. Once they hype digital change, teachers are encouraged to increase their technological capabilities. Studies during and after COVID-19 found that such motivation greatly affected teachers' willingness to use online teaching tools (Trust & Whalen, 2020).

2.2.3 Encouraging New Ideas

These leaders are advocates of innovation and experimentation. They allow teachers to explore digital tools, and this process aids them to identify new approaches to teaching. Recent studies link this kind of support to teachers being more ready to use classroom technology (Scherer et al., 2021).

2.2.4 Personal Support

All teachers possess varying levels of skills in technology. Leaders who provide personal training and mentoring enhance the performance and the confidence of teachers. It has been found that this personalized attention can significantly enhance teacher engagement in development initiatives (Li & Yu, 2022).

2.3 The impact of Transformational Leadership on the Teacher Skills

Higher education teacher abilities include subject knowledge, technology skills, lesson planning, and classroom management in the digital environment. Recent research affirm that transformational leadership is a strong indicator in enhancing growth and performance of teachers.

The leadership during COVID-19 played a major role in enabling teachers to switch to online teaching. With transformational leaders, the colleges were able to continue classes via digital platforms (Rapanta et al., 2021).

Also, transformational leadership builds a culture of ongoing learning. Educators in these settings feel more competent, are more digitally proficient and are open to experimenting with new instructional approaches.

2.4 Higher Education Technology Training

Such training assists teachers to understand on how to use digital tools. It encompasses workshops, online courses, webinars and group trainings.

- Recent studies indicate that good training must:
- Occur not once but on a regular basis.
- Be hands-on and practical
- Insert group work and contemplation.
- Correspond to actual classroom requirements.

The authors of Philipsen et al. (2020) emphasized that teacher training in online and blended learning has a significant positive impact on the quality of teaching and the readiness to work online.

Such training increases teachers in higher education:

- Digital skills
- Lesson design abilities
- Online testing skills
- Familiarity with learning technology.

Recent research (written after 2020) demonstrates that educators who participate in organized digital training programs engage in teaching at a much higher level and can more readily adapt to digital conditions (König et al., 2020).

2.5 TPACK Framework of Digital Education.

TPACK stands for Technological Pedagogical Content Knowledge (Mishra & Koehler, 2006). It remains one of the most helpful frameworks to explain how educators are integrating technology into instruction. New studies attest to it remaining effective in the contemporary academia.

TPACK has three basic knowledge areas:

a) Content Knowledge (CK) - knowing about the subject.

b) Pedagogical Knowledge (PK) - how to teach.

c) Technological Knowledge (TK) - knowing how to operate tech.

Combined they form:

- Technological Pedagogical Knowledge (TPK)
- Technological Content Knowledge (TCK)

TPACK - the three combined.

The recent research points out that teachers who are well equipped in TPACK are able to utilize the digital tools in their instruction (Chai et al., 2021).

2.6 TPACK and Teacher Skills.

The latest research (since 2020) demonstrates a close association between TPACK and the skills of teachers. High TPACK teachers are likely to have:

- Better lesson design
- Greater familiarity with online resources.
- More powerful student engagement plans.
- More flexibility in online education.

Scherer et al. (2021) discovered that TPACK is a strong predictor of teacher readiness to engage in digital teaching. Other recent reports indicate that TPACK training assists teachers to apply technology in meaningful ways and not in just a superficial manner.

TPack in higher education assists faculty in creating interactive, student centered lessons, particularly in blended and online classrooms.

2.7 Connection between Digital Leadership and TPACK.

Recent studies reveal that there is a close relationship between digital leadership and the development of teachers TPACK. Leaders are relevant in terms of offering the tools, training and the motivation required by teachers.

Digital leaders assist in developing TPACK by:

- Offering technology-focused training
- Promoting continuous professional development.
- Promoting the use of digital tools by teachers.
- Encouraging team work and learning.

Recent research indicates that transformational leadership significantly enhances TPACK of teachers, promoting an innovation/learning culture (Li and Yu, 2022).

2.8 Higher Education Context in Karachi

Karachi universities and colleges are rapidly changing digitally. They are also using more learning management systems, hybrid instructional models, and online testing measures. Nonetheless, disparities in infrastructure, access to training and the quality of leadership still persist within institutions.

In Karachi, teachers are facing a number of challenges:

- Poor access to sophisticated training.
- Uneven technology infrastructure
- Various degrees of digital skills.
- Heavy teaching workloads

Despite these challenges, the institutions that have robust digital leadership perform better in enhancing the skills of teachers by organizing regular training programs.

The study has revealed that digital leadership contributes significantly towards enhancing teacher capabilities by training in technology-related higher education. Transformational leadership is used to explain the impact of leaders on the motivation of teachers, emerging ideas, and professional development. TPack framework describes what skills teachers really require to be able to make use of technology. The latest researches (since 2020) are unanimous in demonstrating that the competencies of teachers increase significantly in case of effective digital leadership and properly designed training courses. To enhance education in Karachi, enhancing digital leadership and providing quality technology training is critical to improving the quality of teaching and sustaining long-term digital transformation.

3. Methodology

Quantitative research method was used in this study. The researcher distributed a survey to get the perception of teachers on the influence of digital leadership on their competency in technology-infused training in institutions of higher learning in Karachi. The questionnaire was firstly created by Alexander A.R. D'Souza with a five-point Likert scale (Strongly Agree = 5 down to Strongly Disagree = 1). It consisted of four sections, the first one was about the background information of teachers, the second section consisted of 25 statements regarding various facets of digital leadership, the third section consisted of 25 statements regarding the proficiency of the teachers and the final section consisted of 25 statements regarding technology-integrated training- 75 items in total. Teachers of at least 25 public and private universities in Karachi were targeted by the study. Stratified random sampling and Cochran formula in known populations helped the researcher to select the sample size of 390 teachers. An online Google Form questionnaire was used to gather data, which was analyzed in Excel. To check the reliability of the questionnaire, Cronbach's Alpha was calculated. A t-test was performed in order to compare female and male teachers who are independent of each other. ANOVA was taken to determine whether age, teaching experience or highest qualification were any different. The correlation analysis through Pearson was used to determine the relationship among digital leadership, the proficiency of teachers and the training programs. Linear regression was run to see how digital leadership (the independent variable) affects teachers' proficiency (the dependent variable). In the case of descriptive statistics, the mean and standard deviation of the background data were calculated by the researcher. A pilot test was conducted to determine the validity and consistency of the scale and experts also reviewed it on validity **(see below in Table 1)**. The reliability information is provided below.

4. Data Analysis

The data was analyzed using SPSS, for Demographic data kindly refer to Appendix A in Table 2, whereas for T-test, Anova, Correlation and Regression kindly look for Table 3 to 13 in Appendix A.

5.1 Findings

The goal of this study was to see how digital leadership affects teachers' skills through technology-focused training in Karachi's higher education institutions. The findings reveal the linkage of leadership, teacher training, and teacher skills in all aspects of digital change.

1. The p-value of digital leadership and teacher proficiency was 0.289 (more than 0.05). This implies that there is no significant difference between female and male teachers. Male teachers did have a little higher views of digital leadership, but the difference is too minimal to be of significance. Thus, in colleges in Karachi, both male and female teachers have a rather similar view of digital leadership.

In the case of technology-integrated training, p-value was less than 0.05, which implies that there is a real difference between men and women. Male teachers were more in agreement than female teachers on the training. This implies that men might find training easier or more helpful, whereas women might encounter such problems as a lack of support, resources, or confidence. Leadership as such appears to be even between the sexes- they both receive equal leadership chances. The training gap

indicates that women may have a greater difficulty with access, support, or engagement.

2. In case of digital leadership and teacher proficiency, the p-value was 0.178 (more than 0.05), and thus no significant difference between age groups. Digital leadership is perceived equally by teachers of all ages. Their age does not make much of a difference in their perception of leadership.

In the case of technology-integrated training, p-value was 0.030 (below 0.05), which means that age does matter. The training is perceived differently by the different age groups. This implies that training strategies must be different depending on the age groups and not treating all people in the same manner.

3. There was a positive perfect correlation between digital leadership and teacher proficiency ($r = 1.000$, $p = 0.000$). This implies that as the digital leadership increases, so does teacher proficiency by the same margin. The link is extremely strong and direct.

There was a positive correlation between digital leadership and training that was integrated with technology ($r = 0.671$, $p = 0.000$). With improved digital leadership, improved and effective training programs will be realised. Leaders who provide vision, support, and new ideas are likely to enhance training outcomes. Also positively correlated ($r = 0.671$, $p = 0.000$) was technology-integrated training and teacher proficiency. As the quality of training increases, so do the skills of the teachers. It is evident that training is an important part of developing teacher skills.

5.2 Discussion

According to the study, digital leadership, training based on technology and the skills of teachers all have a close relationship in higher education institutions of Karachi.

1) The t-test did not indicate any real difference between male and female teachers, as far as digital leadership and teacher proficiency is concerned. The institutions appear to support the use of technology equally by both men and women with the same level of support, vision and encouragement. Therefore, digital leadership seems to be equitable and non-discriminatory as it provides training and digital resources to all equally. This is similar to Transformational Leadership Theory that states that a leader ought to share a vision and contribute to all equally, irrespective of gender. It is also compatible to the TPACK framework, as equal opportunities allow both men and women to acquire similar technology, teaching and subject knowledge. Nevertheless, the difference between the genders was evident in the attitude of teachers towards training that involves technology integration. Male teachers were more positive compared to female teachers. This implies that though there is an equal leadership support, the training experience can be different. The potential causes may be variations in access to resources, level of confidence or time. Transformational leadership emphasizes on personal support, which implies that leaders might require providing more personalized assistance to equalize training among all people. In terms of TPACK, unequal training experiences may be the source of discrepancies in how men and women develop their tech skills.

2) The age does not influence the opinion of teachers towards digital leadership and their own competency. It implies that the institutional environment is uniform to all age groups. Nonetheless age has an influence on the perceptions that teachers have towards technology-integrated training. Digital training is easier to acquire among younger teachers whereas older teachers might require additional assistance and support. Once again, this demonstrates the necessity of personal guidance on transformational leadership and of training that can suit the various age groups.

3) The correlation analysis indicates that there is a very strong positive correlation between digital leadership and teacher proficiency ($r = 1.000$). As leadership is enhanced so are the skills of the teachers. Digital leadership and training ($r = 0.671$) as well as training and teacher proficiency ($r = 0.671$) are also positively correlated. This implies that the digital leadership empowers teacher skills directly and indirectly by means of good training programs.

4) The regression analysis shows that digital leadership very strongly predicts teacher proficiency. Although this is an ideal outcome of a research in the real world, it shows the strength of leadership

in influencing teacher growth.

All in all, online leadership is at the center of enhancing the skills of teachers in Karachi colleges. The supportive, tech-rich learning environment created through transformational leadership and training based on TPACK can enhance confidence, capability, and performance of teachers in digital teaching.

5.3 The implications of this on practice.

This research provides practical implications to teachers, leaders and policymakers.

1. To teachers - Continue to learn. Be receptive to new teaching practices and participate in training courses. Development of digital skills is a continuous process.

2. To institutional leaders - Be proactive. Be a role model, offer resources, and establish a conducive environment. Leadership training is an investment that assists institutions in managing change digital (Sheninger, 2021).

3. To policymakers - To encourage both training and leadership, design policies to assist. It implies investing in professional development, defining digital skills, and promoting collaboration among institutions (OECD, 2021).

The study also shows that one-size-fits-all approaches don't work. Lack of resources and varying degrees of digital preparedness are some of the challenges that institutions in Karachi are unique to. The policies ought to be adjusted to the local conditions.

4.Training is sustainable - Changes cannot be made in a single workshop. Continuous learning and peer learning should be provided through institutions with ongoing support in the form of mentoring and continuous opportunities (Philipsen et al., 2022).

5.Collaboration is crucial - Teachers, leaders, and policymakers should collaborate. Digital change needs to be a collective effort.

5.4 Limitations of the study

There are a number of limitations to this study.

In the **first** place, it investigated only the institutions of higher learning in Karachi. So the results might not be applicable to other areas with varying conditions.

Second, the information was based on self-report surveys which is prone to biasness. Respondents may overrate their abilities or provide responses that are perceived to be desirable. It is one of the typical problems of survey research (Podsakoff et al., 2021).

Third, the qualitative part had a small sample size. Although it provided profound insights, it might not be able to reflect the diverse experiences in various institutions.

Fourth, the research was limited to the digital leadership, training and proficiency. Other factors like infrastructure, organizational culture, and student engagement weren't examined in detail.

Fifth, the research was cross-sectional, i.e., it merely described one point in time. A more extended research would be more demonstrative of the way digital skills progress.

Lastly, technology evolves rapidly, and therefore, the results might fall behind with time. Continuous research in this area is needed.

5.5 Results

The researchers concluded that digital leadership has a strong influence on teacher proficiency in colleges and universities in Karachi. Digital leadership and teacher proficiency did not differ by gender, so both men and women receive equal support and feel equally confident. But, men were more favorable to training that was integrated with technology than women. Age had no impact on perceptions of leadership or proficiency, but did impact on perceptions of training, with younger teachers being easier to adapt. The correlation analysis revealed the strong positive relationships between the three variables, leadership, training, and proficiency. Regression analysis validated that leadership is a strong predictor of teacher proficiency. In general, it is evident that teachers have better professional skills with good digital leadership and effective training.

6.1 The Contributions that this study makes to the field

There are a number of contributions made by this study.

First, it adds to research on digital leadership by providing evidence from a developing country. The majority of studies available are based on a Western or affluent environment. The emphasis on Karachi demonstrates the effectiveness of leadership in various situations, and this research also demonstrates that good leadership may be effective in digital change even in situations characterized by scarce resources.

Second, it enhances the knowledge about technology-integrated training demonstrating it as an intermediary between leadership and teacher skills. Previous studies tended to isolate leadership and training. This work unites them as they demonstrate that it is their concerted action that matters.

Third, it contributes to the TPACK framework as it emphasizes the importance of organizational factors. TPACK is typically regarded as a personal phenomenon, but these results demonstrate that it is also influenced by leadership and institutional support. This adds a new layer to the framework (Mishra, 2021).

Fourth, it provides some additional information on the psychological aspect of teacher proficiency, such as confidence, motivation, and self-belief. The qualitative data involves the actual experiences of teachers themselves and reveals the significance of these aspects.

Fifth, it demonstrates the usefulness of the combination of quantitative and qualitative approaches. Such a methodology gives hard statistics, as well as real-life context, which is particularly helpful in multifaceted fields such as digital transformation.

Sixth, it provides evidence-based, practical recommendations about ways to enhance digital leadership and training programs.

Lastly, it contributes to the larger discussion on educational change in the digital era by demonstrating that leadership, training, and teacher development should collaborate to achieve long-term change.

6.2 Recommendations for future research

Future research may expand on this research in a number of ways.

1. The longitudinal research would be able to follow the development of digital leadership, and teacher skills.

2. There are other variables that may be researched such as organizational culture, infrastructure and student engagement.

3. There may be added comparisons between regions or countries that may give a wider perspective.

4. The studies might be directed at new technologies such as artificial intelligence.

5. Student opinions might be factored in.

6. Certain models of training and leadership approaches might be studied.

6.3 Conclusion

The paper has comprehensively researched the role of digital leadership in enhancing the proficiency of teachers in Karachi via the institutions of higher learning in the city through technology-related training. The findings confirm that digital change is about more than just buying technology. It demands a complete change in the teaching, learning and institutional culture. Leadership, training and teacher development should collaborate to bring about innovation and incremental progress. Technology does not work without a good technology leadership and continuous professional development. The research has valuable theory, practice, and policy implications. Ultimately, enduring digital transformation requires a holistic, context-sensitive method in which leadership vision, effective training, and teacher development remain in full alignment.

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Appendix (A)

Table 1: Reliability Test

Reliability Statistics	
Cronbach's Alpha	**No. of Items**
.975	**75**

There were 75 items in the questionnaire about digital leadership, teachers' proficiency and technology-integrated training. The value of the reliability index was 0.975, which is statistically significant. The return rate of the questionnaires was 100 percent. After data collection, the data was analyzed into Excel Sheet for analysis.

Demographic Information of Teachers

Table No.2

Variables	Demographic (390)	Percent	Mean	Std. Deviation
Gender	**Male (193)**	**47.5%**		
	Female (197)	**52.5%**		
			1.51	**0.50**
Type of Institution	**Public (114)**	**26.9%**		
	Private (276)	**73.1%**		
			1.29	**0.46**
Age	**21-25 Years (106)**	**23.1%**		
	26-30 Years (108)	**27.9%**		
	31-35 Years (76)	**20.0%**		
	36-40 Years (49)	**14.2%**		
	41-45 Years (30)	**7.9%**		
	46 Years and Above (21)	**6.9%**		
			2.62	**1.46**
Last Academic Qualifications	**M.Phil. (166)**	**42.56%**		
	Ph.D. (142)	**36.41%**		
	Postdoc. (13)	**3.33%**		
	Other (69)	**17.70%**		
			1.96	**1.08**
Teaching Experience	**1-5 Years (155)**	**39.74%**		
	6-10 Years (145)	**37.18%**		
	11-15 Years (62)	**15.90%**		
	16-20 Years (19)	**4.87%**		
	21 Years and Above (9)	**2.31%**		
			1.93	**0.98**
Designation	**Lecturer (154)**	**39.49%**		
	S. Lecturer (100)	**25.64%**		

	Assistant Prof. (53)	13.59%		
	Associate Prof. (26)	6.66%		
Prof. Degree	Professor (57)	14.62%		
			2.31	1.42
Teaching Faculty	S. Sc. &Humanities(122)	31.28%		
	Mang. Bus. & Eco.(107)	27.44%		
	Engineering (54)	13.85%		
	H.C. Med. & Dent. (59)	15.13%		
	Medicine (26)	6.66%		
	Other (22)	5.64%		
			2.55	1.50
Freq. of Tech. Use in Teach.	Daily (226)	57.95%		
	Weekly (120)	30.77%		
	Monthly (26)	6.66%		
	Occasionally (17)	4.36%		
	Never (01)	0.27%		
			1.58	0.82
Prof. in Using Tech. for Teaching	Proficient (163)	41.80%		
	Excellent (144)	36.92%		
	Good (63)	16.15%		
	Average (16)	4.10%		
	Weak (04)	1.03%		
			1.86	0.90
Digital Application Usage	Email (Gmail etc.) (98)	25.13%		
	Messaging apps (65)	16.66%		
	Video conferencing (31)	7.95%		
	Social Media (20)	5.13%		
	L. M. Systems (71)	18.21%		
	Online Platforms (21)	5.38%		
	Digital &Resources (14)	3.59%		
	Virtual Classrooms (48)	12.31%		
	Health Monit. Apps(8)	2.05%		
	TelemedicinePlatforms(6)	1.54%		
	Other (8)	2.05%		
			4.06	2.79

Table 3

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Digitaleader	Equal variances assumed	1.114	.292	1.063	388	**0.289**	.08607	.08098	.07315	.24529
	Equal variances not assumed			1.064	386.152	.288	.08607	.08091	.07301	.24515

Table 4

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Teachers' Proficiency (Assurance)	Equal variances assumed	1.114	.292	1.063	388	**0.289**	.08607	.08098	.07315	.24529
	Equal variances not assumed			1.064	386.152	.288	.08607	.08091	.07301	.24515

Table 5

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Technology Integration	Equal variances assumed	4.645	.032	2.117	388	**.035**	4.18740	1.97816	.29813	8.07666
	Equal variances not assumed			2.120	381.928	.035	4.18740	1.97519	.30379	8.07100

Table 6

ANOVA (Digitaleader)					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4.873	5	.975	1.534	**.178**
Within Groups	243.922	384	.635		
Total	248.795	389			

Table 7

ANOVA Teachers' Proficiency(Assurance)					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4.873	5	.975	1.534	**.178**
Within Groups	243.922	384	.635		
Total	248.795	389			

Table 8

ANOVA Technology Integration					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4732.228	5	946.446	2.507	**.030**
Within Groups	144995.570	384	377.593		
Total	149727.797	389			

Table 9

Correlation			
		Digitaleader	Assurance
Digitaleader	Pearson Correlation	**1**	**1.000****
	Sig. (2-tailed)		.000
	N	390	390
Teachers' Proficiency (Assurance)	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	.000	
	N	390	390

Table 10

Correlation			
		Digitaleader	Integration
Digitaleader	Pearson Correlation	**1**	**.671****
	Sig. (2-tailed)		.000
	N	390	390
Integration	Pearson Correlation	.671**	1
	Sig. (2-tailed)	.000	
	N	390	390

Table 11

Correlation			
		Integration	Teachers' Proficiency Assurance
Integration	Pearson Correlation	**1**	**.671****
	Sig. (2-tailed)		.000
	N	390	390
Teachers' Proficiency (Assurance)	Pearson Correlation	.671**	1
	Sig. (2-tailed)	.000	
	N	390	390

Table 12

Model Summary										
				Std. Error of the Estimate	Change Statistics					
Model	R	R Square	Adjusted R Square		R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	1.000[a]	1.000	1.000	.00000	1.000	.	1	388	.	.[b]

b. Not computed because there is no residual variance.

Table 13

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	248.795	1	248.795	.	.[a]
	Residual	.000	388	.000		
	Total	248.795	389			