Research Article

Exploring the Integration of Digital Pedagogy in Classroom Instruction among DoE Trained Graduate Teachers of Delhi State

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Abstract

The incorporation of digital pedagogy has become a revolutionary force in the ever-changing environment of modern education, redefining the conventional paradigms of classroom instruction. This study explores the field of educational innovation with a particular focus on the Digital Pedagogy methods that Graduate Teachers in Delhi, a bustling state, have embraced. These teachers were trained by the Department of Education (DoE). The job of educators is becoming more and more important in managing the junction between traditional teaching approaches and cutting-edge digital tools as technology continues to grow at a rapid pace. This study aims to provide important insights into the continuing conversation about digital education by closely examining the experiences and practices of DoE-trained graduate teachers.

In light of this, this study sets out to explore the complexities of integrating digital pedagogy into classroom instruction among Delhi State's graduate teachers who have received training from the Department of Education. This study aims to provide light on how teaching methods are changing in the digital age by exploring the perspectives and tactics used by these educators. Purposive sampling was done and the data was collected through google forms. Quantitative as well as qualitative technique was used for data analysis.

Findings reveals that rather than just implementing new technology, digital pedagogy is viewed as a whole revolution that alters teaching strategies, educational philosophies, and student engagement techniques. This study aims to stimulate meaningful discourse and action toward realizing the full potential of digital pedagogy for improving education in Delhi State and beyond through well-informed views and recommendations based on evidence.

Keywords: Digital pedagogy, DoE-trained graduate teachers, Digital Technology, Teaching-Learning Process, ICT.

Introduction

The integration of digital pedagogy has become a transformational force in the field of modern education, transforming classroom teaching dynamics globally. The integration of technology into teaching practices has emerged as a

central theme for educational reform and development, as educators look for creative ways to engage students and adjust to the demands of a quickly changing digital era.

Every element of our lives, including education, communication, governance, finance, marketing, and health, is impacted by digital technologies. Since digital technologies are used in every aspect of life, new abilities and skills are required. Teachers have been educated to increase the amount of digital technology they use in the classroom in order to better prepare students for the demands of the twenty-first century. Information and communications technology (ICT) support for teachers may be provided via the training (Pongsakdi, Nonmanut & Kortelainen, Arto & Veermans, Marjaana. (2021).

According to a 2013 study by the European Union, teachers' operational ICT confidence levels may have an impact on how frequently they include ICT-based learning activities into their lessons. Teachers' confidence has been proven to be much enhanced by professional development programs and teacher training (Ertmer and Ottenbreit-Leftwich 2010). ICT-trained teachers typically have lower levels of anxiety, are more comfortable using ICT, and place a higher value on it (European Union 2013). Enhancing the use of digital technology for learning and evaluating these abilities has become imperative as a result of the school reform (Göçen et al. 2020). Teachers must incorporate digital competency into their work in order to implement digital learning, which also demands an appropriate pedagogical approach (Aslan and Zhu 2016). It encompasses not just the technological know-how of instructors but also their ability to appropriately use and apply technology in their own teaching. The degree to which educators think that utilizing technology could improve their ability to teach is known as the perceived utility of technology, according to Teo et al. (2016). Therefore, teachers' assessments of how much utilizing technology would enhance instruction and learning are referred to as perceived usefulness.

Previous research indicated that teachers are less inclined to incorporate technology into their everyday practices if they are not convinced of the benefits of technology on instructional efficiency (Kim et al. 2013).

When digital tools are deliberately and thoughtfully incorporated into educational activities, teaching and learning are improved. This approach is known as digital pedagogy. By recognizing the transformative potential of digital tools and technologies in the educational landscape, it signifies a paradigm shift away from traditional pedagogical methods. In order to engage students, encourage critical thinking, and create a more dynamic and interactive learning environment, educators use a variety of strategies, approaches, and techniques known as digital pedagogy.

Digital Pedagogy

Theory and practice in education are the focus of the field of regular pedagogy. It covers the content, delivery method, and social implications of education. ICT is used in digital pedagogy to improve instruction both within and outside of the classroom. Power point presentations in the classroom or the provision of online instruction are two examples. It facilitates dynamic, innovative, and successful learning. Also, it encourages accountability and distributive learning. Teaching with digital tools includes using web development, instructional design, collaborative maps, lecture recording, course blogs, multimedia assignments, online courses and journals, collaborative text, and visualization projects. The qualities

that define digitally literate instructors include subject-matter understanding and relationships that facilitate learning. Regardless of level of education, digital pedagogy is now an essential component of education given the current post-pandemic environment. Given that every industry in the world is going digital, it is imperative right now. Technology has had a significant impact on education and led to the creation of digital pedagogy, which is now an essential component of modern society. It used to be limited to distant learning and higher education, but it is now a part of the entire educational system.

It is impossible to introduce any change without including instructors, who are the most crucial element in the process (Darling-Hammond et al., 2005). Teachers' behavior in the classroom is greatly influenced by their own opinions about the best ways to teach and learn (Albion & Ertmer, 2002). The degree to which educators embrace new digital teaching techniques and adjust to a new technology-based learning environment is also influenced by their fundamental beliefs (Clarke, Dede & Dieterle, 2008).

In the intense educational environment of Delhi State, where the Department of Education (DoE) has a significant influence on how pupils learn, graduate teachers' investigation of digital pedagogy is an important undertaking. Equipped with an abundance of pedagogical expertise and experience, these educators lead the way in educational advancement and are tasked with shaping the brains of future generations.

Delhi offers a fascinating backdrop for examining how teachers adjust to the demands of a digital learning environment because it is a center of technical innovation and educational variety.

As we proceed on this journey, the incorporation of digital pedagogy is seen as a comprehensive transformation that reshapes instructional methodologies, pedagogical philosophies, and student engagement tactics rather than just the adoption of technical instruments. This will ultimately lead to a greater comprehension of the dynamic changes occurring in the contemporary classroom. Through elucidating the viewpoints and experiences of graduate teachers trained by the Department of Education, this study seeks to educate practitioners, educational administrators, and policymakers about the changing face of education in the digital era.

In order to corroborate the present study a few of the researches were gone through, Ahuja & Yadav (2019) carried out a study to evaluate the impact of digital pedagogy interventions in rural areas. This study explores the impact of an interactive digital pedagogy model on students' academic progress and pedagogical satisfaction in remote places.

The findings show that when exposed to interactive digital pedagogy rather than traditional pedagogy, kids in remote areas fared better. It indicates that students are performing well academically. It was also shown that because interactive digital pedagogy allowed students to interface with the outside world of education, they were eager to learn and actively participated in their studies. The majority of pupils mentioned active learning and learner autonomy.

In continuation to it another study made by Wadmany, R., & Kliachko, S. (2014) titled "The Significance of Digital Pedagogy: Teachers' Perceptions and the Factors Influencing their abilities as Digital Pedagogues", investigated the perceptions of alumni of the Technology in Education master's program on the importance of digital pedagogy. This research was qualitative in nature.

This research strategy was chosen in order to thoroughly investigate the research questions and to get meaningful responses that can improve our comprehension of the program's student needs and the extent to which it satisfies those needs in the dynamic, ever-changing educational system.

There is a great increase in usage of digital tools and media by teachers in their professional responsibilities. This trend is also supported by Mohamad, Nurdin, and Sururi (2023) in their study which mapped the use of digital technologies in teachers' practice. The study highlighted a preference for smartphones, messaging apps, and text-based learning materials enriched with videos and images for teaching and assessment in hybrid learning environments. These results showed that 56.99 per cent of teachers use smartphones for learning tools whereas other 43.01 per cent use PC/laptop devices. Also, 48.39 per cent of teachers conducted digital learning through message apps, 19.35 per cent through LMS, and the rest through online meetings, social media, or all the types simultaneously.

Bentri A. & Hidayati A., (2022), made the study titled as- "The Developing of Digital Pedagogical Curriculum of Primary Education Teachers in Indonesia." The study has determined which curriculum goals, instructional resources, experiential learning opportunities, and assessment instruments are essential for fostering teachers' digital pedagogy competencies. The study's findings indicated that educators needed to be as knowledgeable as possible about identifying characteristics in order to create digital learning materials. They actively used social networking sites to share online content, and they were informed about the applications used to create digital learning tools. It also revealed that instructors' capacity to participate in online communities and communicate with peers effectively was a prerequisite for improving their digital analytical skills. Additionally, it was crucial to be proficient in using e-learning platforms.

Cowling, M. A., et. al., (2022) in their research titled as, "The EdTech difference: Digitalisation, digital pedagogy, and technology enhanced learning" examine the issue of the journal that focused on educational technology (EdTech). It has been discovered that the best online teaching and learning environment may entail the use of ICT technologies that encourage group projects, improve communication, and increase student interest in lectures. In closing, this editorial highlight how upcoming writers might contribute to educational technology research in a meaningful and productive way. For technology to be used effectively in teaching and learning, whether online or not, it is advised that it be used in context, that solid theory be used, and that learning be given more attention. In summary, assessing the efficacy and application of research on educational technology necessitates a careful examination of the interplay between people, technology, pedagogy, and learning.

There is a need for effective teacher training programs to enhance teachers' ICT competencies and align with the global trends in education. The main focus should be on providing competencies essential for online teaching, such as pedagogy, technology, content design, institutional management, communication, and social aspects. Akram & Alomari (2023) did a study for understanding multifaceted nature of teachers' competencies required for successful online teaching. They found a positive impact of training programs on enhancing teachers' competencies and highlighted the need for ongoing support and training initiatives in this area. It has provided a structured

approach to assessing teachers' strengths and weaknesses in online education, benefiting educational institutions at all levels.

Teachers with high willingness to adopt digital technologies always remain more relevant in tough times than the reluctant ones. The same concern is shown in a study done by Pankaj et al. (2022) during the COVID-19 Pandemic. It examined the foremost determinants of teachers' perception, i.e. teachers' satisfaction, attitude and continuance intention towards adopting e-learning in during the COVID-19. The study found that the Teachers who perceived e-learning as useful were more satisfied with the online teaching-learning practices**.** Also**,** support from educational institutions plays a vital role in enhancing teachers' satisfaction with e-learning adoption in HEIs in India.

Sadiku, M. et. al. (2019) in their study titled as "Digital Pedagogy" mentioned that Digital pedagogy opens numerous possibilities for educators to leverage technology in enhancing teaching and learning. The proliferation of workshops, conferences, and publications indicates a significant growth in interest in digital pedagogy across the academic community. Effective teaching in the twenty-first century requires not just content knowledge but also technical proficiency. The use of instructional design, web development, collaborative mapping, course blogs, lecture capture, multimedia assignments, online courses, online journals, collaborative text, and visualization projects are all included in the field of digital pedagogy. Teachers with strong digital abilities show that they have a thorough comprehension of the material and can help students make connections.

The study made by Srivastava K. & Dey S. (2018) examined the Role of Digital Technology in the Teaching-Learning Process. Their paper explores the difficulties that come with using digital technology in the classroom and highlights how resolving these problems can promote successful technology adoption. The study's conclusions show that teacher educators' perceptions of the use of digital technology tools in the classroom are generally moderate. Although they realize the difficulties in using these tools, they also recognize how well digital technology supports teaching and learning.

The National Education Policy,2020 in India highlights the significance of mentoring and provides tools for tracking teachers' career progression. (Ministry of Human Resource Development, 2020). This suggests a systemic integration of mentor teachers into the state machinery to advocate for career advancement, ultimately scaling and sustaining quality Continuous Professional Development (CPD) in the education system. In line with this, a study by (Amina et al., 2022) emphasizes the importance of experienced and motivated mentors in offering online support to teachers to enhance equity, scale, and quality of education. The pandemic lockdown pushed many teachers, including rural teachers in India, to accept technology-enabled teaching, and the prior experience of CPD among mentor teachers significantly supported their transition into mentoring roles and motivated them to excel in the new context. This study emphasizes how critical it is to provide our teachers with the newest digital techniques to guarantee that the demands of the pupils are not compromised.

While integrating ICTs in teaching-learning practices, along with the prospective advantages a serious emphasis must also be given to willingness, attitudes, and challenges encountered by teachers. By understanding teachers' experiences and perceptions towards technology

integration, the concerned authorities formulate policies which are much more effective for integrating ICTs in educational settings (Huma et al., 2022). Their study also sheds light on the barriers faced by teachers in integrating technology into their teaching practices, such as slow internet speed, load shedding, lack of infrastructure, online teaching experience, and training deficiencies.

Need and Rationale of the Study

The present paper tries to investigate the current status of the utilization of digital pedagogy by trained graduate science teachers. It explores the extent of utilization of various digital technological tools and their applications. This study also explores the perception of TGTs with regard to the use of digital pedagogies. The researcher aims to evaluate the extent of utilization of digital pedagogies in the classroom teaching-learning process. This study specifically focused on exploring the integration of digital pedagogy by trained graduate teachers (TGTs) in classroom instruction during 2023.

Objectives of the Study:

1. To identify the role of teachers as Mentor Teacher (MT), Academic Resource Team manager (ART) and Teacher Development Coordinator (TDC).
2. To study the extent of utilization of various digital technological tools by TGTs.
3. To study the extent and sources of webinars or workshops attended by TGTs.
4. To study the perception of TGTs with regard to the use of digital pedagogies.
5. To study the extent of utilization of digital pedagogies in the teaching-learning process.

Methodology

The present research was an investigation focused on eliciting the responses of the TGTs on exploring the integration of digital pedagogy in classroom instruction.

Population of the Study

All the middle-stage teachers (TGTs) from DoE schools of the North West district of Delhi state (GNCT of Delhi).

Sample, Sample Size and Sampling Technique

The purposive sampling technique was used to select the sample, and it consists of middle-stage science teachers who use ICT in their regular teaching and learning method during the year 2023. A sample size of the study was 240 teachers selected through random sampling. The study was done in October 2023.

Tool for Data Collection

The group of experts constructed and developed the tool in a workshop. A mixed questionnaire was developed, with the majority of the items being Likert-style closed-ended questions. The initial questions were about demographic data.

Procedure

The researcher used purposive sampling techniques for choosing the teachers. The questionnaire in Google Forms was sent to the teachers, so it did not require authorization from the school administration. The participant responses were recorded on the drive itself.

Data Analysis and Interpretations

Both quantitative and qualitative methods were used to analyze the data.

Delimitations of the Study

1. The study was delimited to DoE schools of North West district of Delhi.
2. The study was limited to TGTs science, who are using ICT in their regular teaching-learning method.

Results and Discussions:

The findings of the present study are discussed below-

Demographics:

In the demographics, the age, gender ratio, highest educational qualifications of teachers, and teaching experience were studied, which were represented in tables-1, 2, 3, 4.

Age Range

The age range of the respondents is shown in Table -1.

Table-1: Age Range

Age Range	Frequency	Percentage
25-30	28	12%
31-35	52	22%
36-40	58	24%
41-45	51	21%
46-50	25	10%
51-55	19	8%
56-60	07	3%

Table 1 shows that teachers' ages range from 25 to 60 years old. To facilitate the study, the teachers were divided into seven age-group groups. Figure 1 shows that almost half of the instructors were under 40 years old. The largest percentage of teachers (24 per cent) were between the ages of 36 and 40. Furthermore, Figure 1 shows that just 11 per cent of the teachers were between the ages of 51 and 60.

Gender Ratio:

Table 2 displays the gender ratio.

Table-2: Gender Ratio

Gender Ratio	Frequency	Percentage
Male	103	42.9%
Female	137	57.1%

Table-2 reveals that the female teachers were more than that of male teachers. It is clearly shown in figure-2. Female teachers were 57.1 per cent, and male teachers were 42.9 per cent.

Highest Qualifications of Teachers

The Highest Qualifications of teachers was shown in Table -3 and figure-1

Table-3: Highest Qualifications of Teachers

Qualifications	Frequency	Percentage
Graduate	47	19.5%
Post Graduate	193	80.4%
B.Ed.	168	70%
M.Phil.	3	1.25%
Ph.D	6	1.4%
NET-JRF	3	1.25%

Figure-1: Highest Qualifications of Teachers

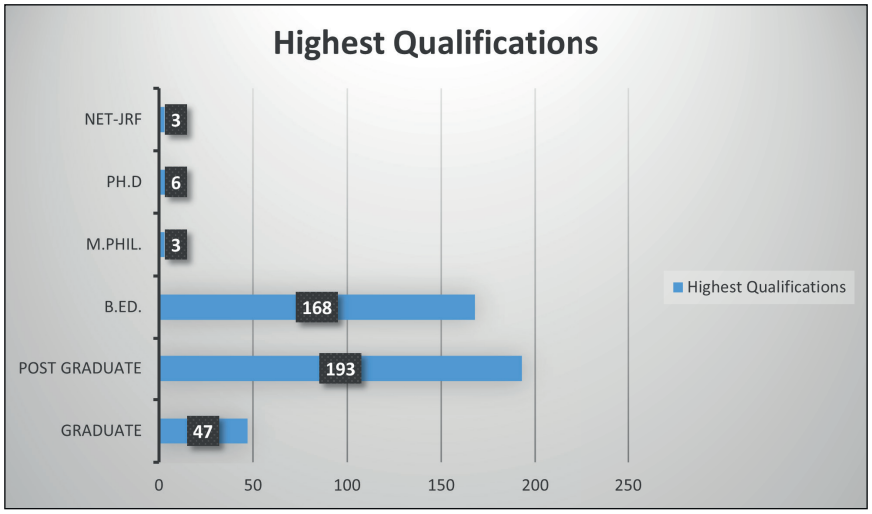


Table 3 shows that postgraduate degrees were held by 80.4 per cent of the teachers. Additionally, it shows that 70 per cent of the teachers have a B.Ed. The table also shows that 19.5 per cent of the teachers were not masters in any field; instead, they were only graduates, including those with a B.Ed. A total of 1.4 per cent of the teachers held a Ph.D. A mere 1.25 per cent of educators held an M.Phil degree, and the same proportion of educators had NET/ JRF in their respective fields. Figure 3 shows the proportion of teachers according to their qualifications. It suggests that the majority of the sample population consisted of postgraduate teachers.

Teaching Experience:

The teaching experience of teachers is shown in Table -4 and figure-2.

Table-4: Teaching Experience

Teaching Experience (in years)	Frequency	Percentage
1 month -5 years	77	32%
6-10 years	59	24.5%
11-15 years	36	15%

Teaching Experience (in years)	Frequency	Percentage
16-20 years	27	11%
21-25 years	28	12%
26-30 years	11	4.5%
31-35 years	2	1%

Figure-2: Teaching Experience (in years)

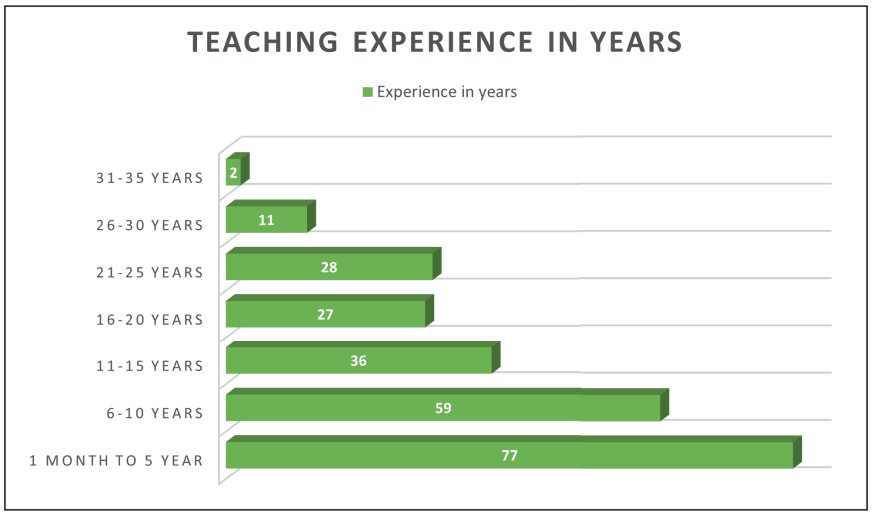


Figure 2 shows the largest number of teachers, or 77, had between one month to five years of teaching experience. Table 4 shows that 56.5 per cent of the teachers, or over 50 per cent of the total, had been in the classroom for up to ten years. Just 1 per cent of teachers had worked for between 31 and 35 years.

Findings for Objective 1: To identify the role of teachers as Mentor Teacher (MT), Academic Resource Team manager (ART) and Teacher Development Coordinator (TDC).

The role of teachers as MT, TDC, and ART is depicted in Table 5 and Figure 3.

Table-5: Role of Teachers

Role of Teachers	Frequency	Percentage
Mentor Teacher (MT)	30	12.5%
Teacher Development Coordinator (TDC)	98	40.8%
Academic Resource Team manager (ART)	112	46.7%

Table 5 represents the roles of teachers as Mentor Teachers, Teacher Development Coordinators, and Academic Resource Team Managers. Figure-5 indicates that the Academic Resource Team manager (ART) was at its maximum ratio, i.e., 46.7 per cent. Teacher Development Coordinator (TDC) was 40.8 per cent, and Mentor Teacher (MT) was the least in number and ratio, i.e., 12.5 per cent.

Findings indicate that TGTs prefer the role of an Academic Resource Team

manager (ART) most; afterwards, the role of Teacher Development Coordinator (TDC) was preferred by them. Very few TGTs play the role of Mentor Teacher (MT). This may be due to the Teacher Development Coordinator (TDC) initiative being an extension of the Mentor Teacher (MT) program. Mentor Teachers are accountable for school-level implementation, Teacher Development Coordinators are responsible for running Academic Resource Team (ART) meetings, and Academic Resource Team are responsible for classroom-level implementation. Thus, the role of ART is at ground level and crucial, so preferred by most of the TGTs. To improve fairness, scale, and quality of education, a study by Amina et al. (2022) highlights the significance of mentors who possess expertise and motivation when providing online help to teachers.

Findings for Objective 2: To study the extent of utilization of various digital technological tools by TGTs.

The findings of these objectives revealed the outcomes presented in Table and Figure 3.

Table-6: Usage of various digital technological tools by TGTs

S. No.	Digital technologies	Always	Often	Sometimes	Rarely	Never
1.	Computers (Laptop/Desktop)	64	88	64	17	7
2.	Internet	157	63	15	3	2
3.	Microsoft Office Applications	65	75	64	20	16
4.	Smart boards	22	57	74	37	50
5.	Massive Open Online Courses	19	64	93	35	29
6.	Virtual Labs/Olabs	9	37	82	50	62
7.	Open Educational Resources	35	78	77	29	21
8.	Learning Management System	32	66	82	30	30
9.	Augmented Reality	10	46	81	41	62
10.	Artificial Intelligence	19	57	67	36	61
11.	Power Point Presentation	52	62	70	33	23
12.	Google Meet	58	98	53	28	03
13.	Microsoft Teams	21	58	70	40	51
14..	Zoom	58	83	67	21	11
15.	Facebook	73	62	54	19	32
16.	Google Form	108	81	33	15	3
17.	WhatsApp	176	48	12	4	0
18.	Telegram	62	60	50	33	35
19..	Google Classrooms	41	64	72	33	30
20.	Any other (please specify)	26	35	65	24	19

Figure-3: Usage of various digital technological tools by TGTs

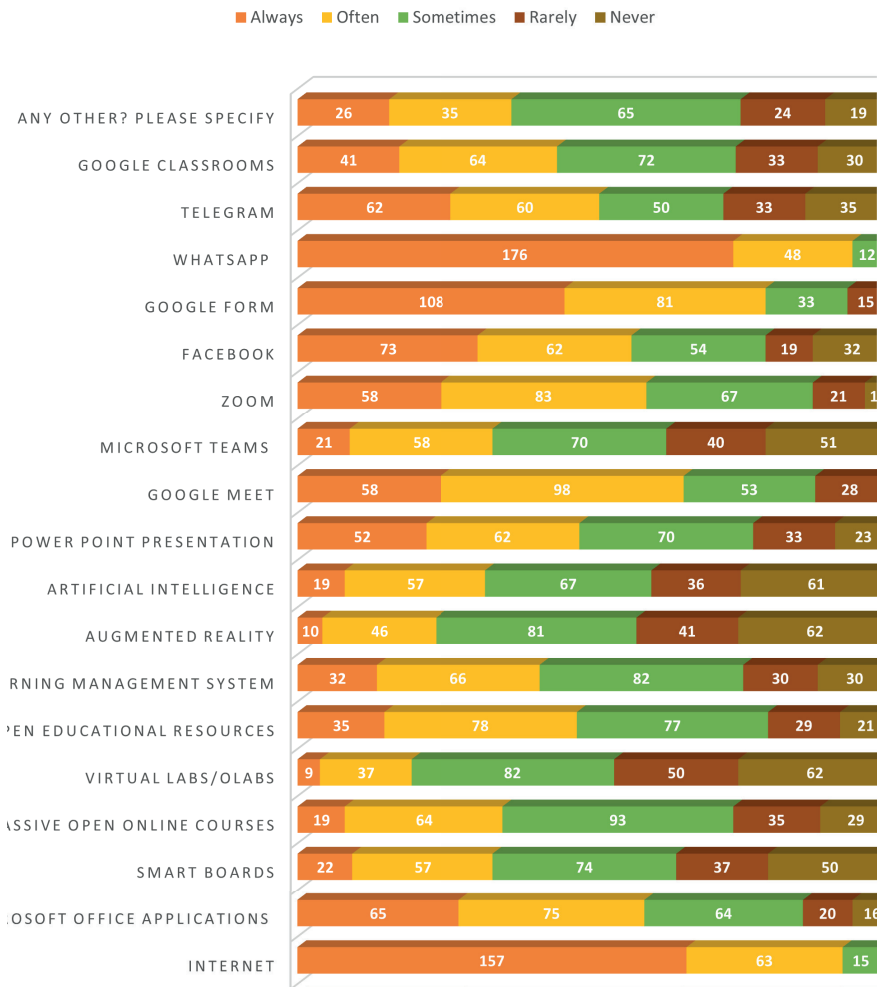


Table-6 represents that internet, what's app and google form were the most popular digital technological tools used always by the TGTs. On the contrary Virtual Labs/Olabs, Augmented Reality, and Artificial Intelligence were never used by more than 25 per cent of the teachers. More than 25 per cent of the teachers used Computers (Laptop/ Desktop), Microsoft Office Applications, Smart boards, Massive Open Online Courses, Virtual Labs/OLabs, Open Educational Resources, Learning Management System, Augmented Reality, Artificial Intelligence, Power Point Presentation, Microsoft Teams, Zoom, Google Classrooms and any other by more than 25 per cent of the teachers.

Findings show that TGTs effectively utilize very basic technological tools, which are quite common. Few of them like the internet and whats app popular even among non-academic persons. Google Classroom was used by 74 per cent of the TGTs from always to sometimes; this may be due to the reason that during and after the pandemic, they may use it for online classes. Telegram, zoom, Facebook, Microsoft Team, powerpoint, open educational resources, Massive Open Online Courses, and MS Office, were

also used by more than 60 per cent of the TGTs. Findings reveals that teachers utilize digital technological tools but there is also need to encourage them to utilize these tools to the maximum and also to explore and utilize tools like Virtual Labs/OLabs, Augmented Reality, Artificial Intelligence which are not quite popular among them.

The findings can be corroborated with Mohamad, Nurdin, and Sururi's (2023) study, which mapped the use of digital technologies in teachers' practice and also supports the rise in the use of digital tools and media by teachers in their professional obligations.

Findings for Objective 3: To study the extent and sources of Webinar or workshops attended by TGTs

Findings of this objectives revealed the following outcomes which have been presented in table-7 and matrix of webinars/ workshop source reported by TGTs.

Webinar or workshop attended

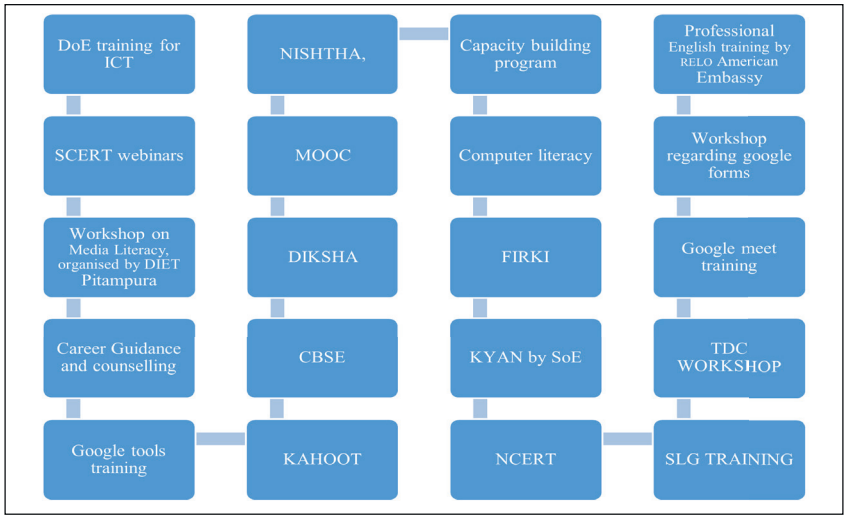
Table-7 shows the webinar or workshop attended by TGTs. Out of 240 samples, 35.4 per cent of teachers confirmed that they had attended webinars or workshops to develop their digital competence, and 64.5 per cent of teachers did not.

Table- 7: Webinar or workshop attended

Workshop attended	Frequency	Percentage
Yes	85	35.4%
No	155	64.6%

The above indicates that 64.6 per cent of TGTs did not attend any kind of webinar or workshop to develop their digital competence, which is a very large number of teachers. This may be due to a lack of devices or high-speed internet. Findings reveal that TGTs are facing the digital divide. So, the extent of utilization of digital pedagogy affected, as only 35.4 per cent of TGTs were attended various workshops and webinars represented in the matrix below.

Figure-4: Matrix of webinars/ workshop source reported by TGTs.



The above matrix represents the sources through which the TGTs attended the webinar and workshop. DoE training for ICT was the main source. Others reported that SCERT has organised webinars related to digital pedagogy

skills enhancement. Media literacy was organized by DIET. There was provision of a capacity building program also. Few reported training by major platforms like DIKSHA, NISHTHA, MOOC, CBSE, KYAN by SoE, FIRKI, etc. RELO American also provided training. The remaining other sources are also listed in the above matrix.

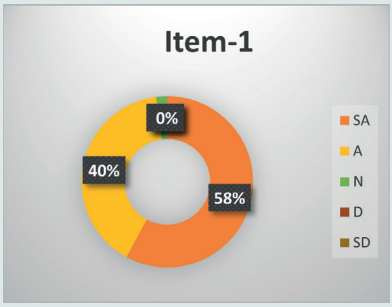
Webinar and workshop sources reported by only 35.4 per cent TGTs. Findings of this objective reveals a huge gap between the trained and untrained teachers. Akram & Alomari (2023), observed that teacher competency was improved through training programs and emphasized the necessity of continued support and training activities in this field.

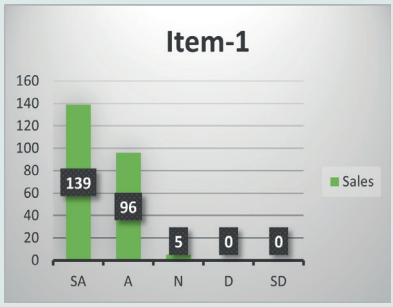
Findings for Objective -4: To study the perception of TGTs with regard to the use of digital pedagogies

The findings of these objectives revealed the following outcomes, which have been presented in Table figure- 5.

Table-8: Perception of TGTs with regard to the use of digital pedagogies

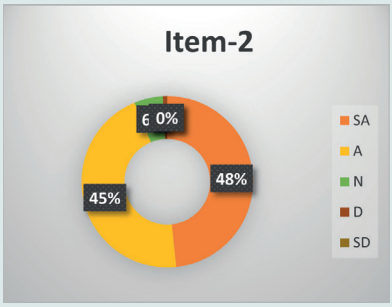
S.No.	Items	SA	A	N	D	SD
1.	Digital technologies help teachers to retain students' attention during the teaching learning process.	139	96	5	0	0

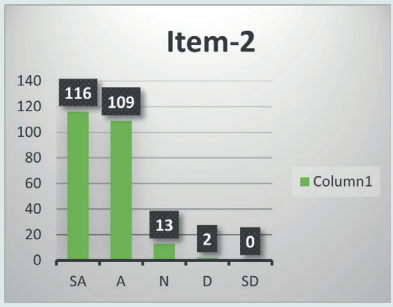




Findings for Item no. 1 indicates that 58 per cent of the total participants were strongly agreed that digital technologies help teachers to retain students' attention during the teaching learning process and 40 per cent were agreed to this. Which shows more than 90 per cent of the participants believe that digital technologies are helpful to retain students' attention.

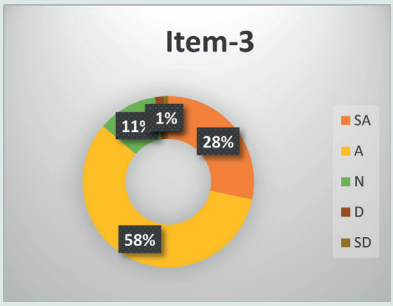
2.	Digital technologies encourage students to try innovative ideas for new situations.	116	109	13	2	0

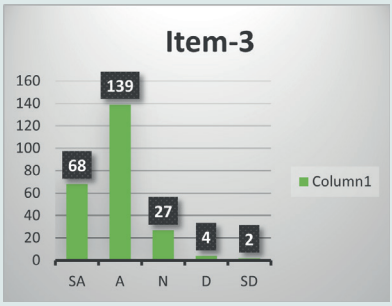




Findings for item no.2 reveal that 48 per cent of the participants strongly agreed and 45 per cent agreed that digital technologies encourage students to try innovative ideas for new situations. The remaining 5 per cent were neutral. Findings reveal the effectiveness of digital technologies for innovation.

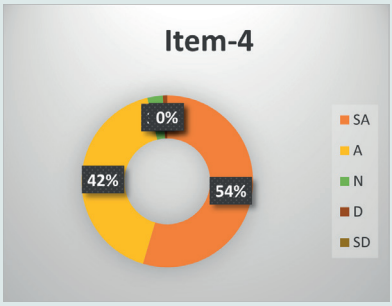
S.No.	Items	SA	A	N	D	SD
3.	I am well aware of the latest digital technologies developed and launched by DoE and GNCT of Delhi.	68	139	27	4	2

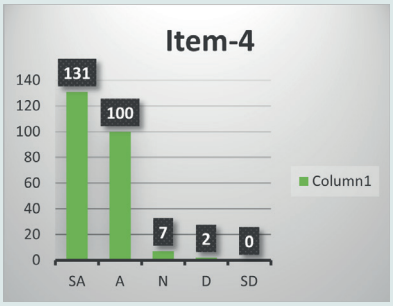




Findings for item no. 3 shows that 28 per cent of the participants were strongly agreed, 58 per cent were agreed, 11 per cent were neutral and 2 per cent disagreed and remaining 1 per cent strongly disagreed for their awareness of the latest digital technologies developed and launched by DoE and GNCT of Delhi. Findings shows that awareness level for latest digital technologies developed and launched by DoE and GNCT of Delhi among teachers is quite good.

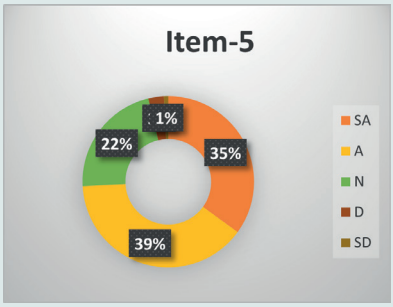
4.	Technology mediated teaching has increased post covid.	131	100	7	2	0

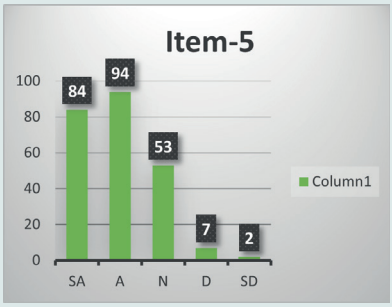




Findings for item no.4 indicate that 54 per cent of the participants strongly agreed that 42 per cent agreed that technology-mediated teaching has increased post covid. This may be due to the understanding of online learning and ICT-equipped instruction practice.

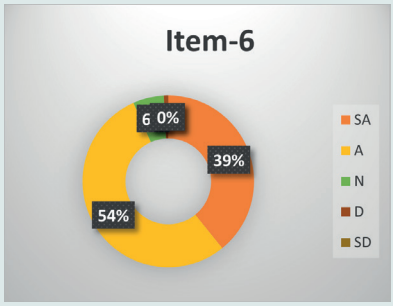
5.	Teachers who are not digitally competent will lag behind in today's era of digital advancement.	84	94	53	7	2

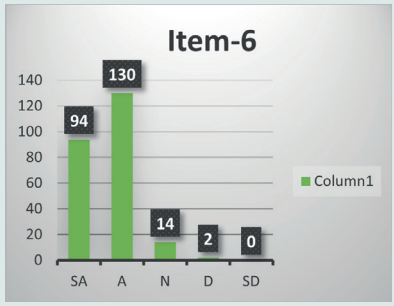




Findings for item no.5 indicates that teachers who were not digitally competent will lag behind in today's era of digital advancement. To this 35 per cent were strongly agreed, 39 per cent were agreed ,22 per cent were neutral ,3 per cent disagreed and 1 per cent strongly disagreed. The result indicates that TGTs understands the importance of integration of ICT, media and online learning.

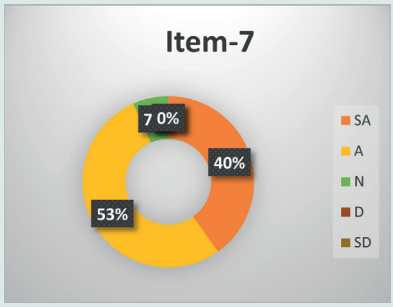
S.No.	Items	SA	A	N	D	SD
6.	I help my colleagues and provide advice when they use digital technologies.	94	130	14	2	0

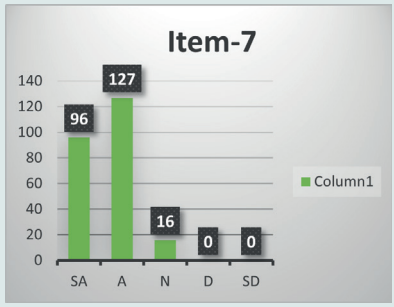




Findings for item 6 shows that 39 per cent were strongly agreed that they help their colleagues and provide advice when they use digital technologies 54 per cent respondents were agreed and 6 per cent were neutral.

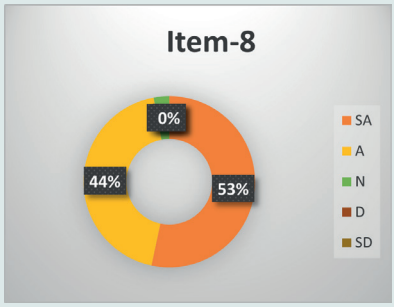
7.	I seek help from my colleagues when I face difficulty using digital technologies.	96	127	16	0	0

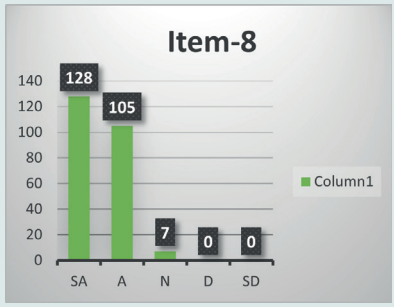




Findings for item no.7 show that 40 per cent of the participants strongly agreed, 53 per cent agreed, and 7 per cent were neutral about seeking help from their colleagues when they face difficulty using digital technologies. Findings indicate that collaborative learning is also possible.

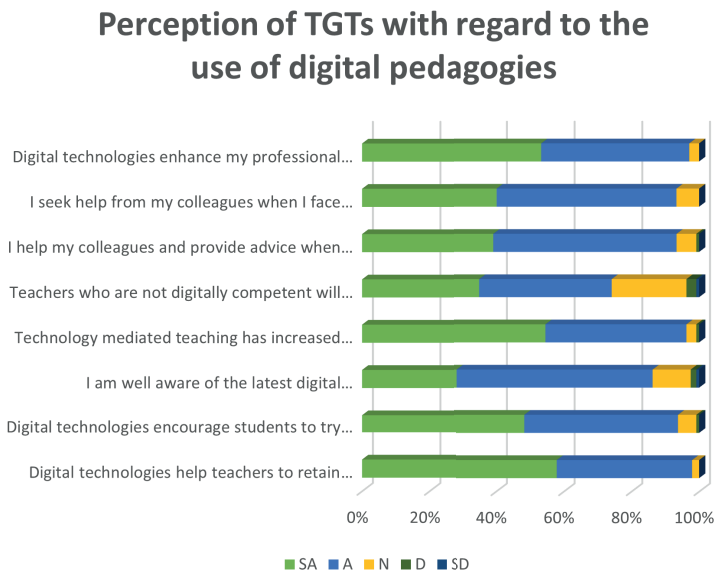
8.	Digital technologies enhance my professional development.	128	105	7	0	0





Findings for item no.8 show that 53 per cent of participants strongly agreed that 44 per cent of participants agreed that digital technologies enhance their professional development. The result indicates that teachers feel competent and confident by integrating digital technologies in the teaching-learning process.

Figure-5: Perception of TGTs with regard to the use of digital pedagogies



Findings of this objective suggested some of the remarkable responses which provided insight into the current practices of the same.

According to the findings, over 90 per cent of participants think that digital tools are essential for holding students' attention throughout instruction. Approximately the same proportion of respondents think that students are encouraged to try out novel ideas via digital technologies. This indicates that pupils' creativity is enhanced by digital tools. Developing their independence as learners is beneficial.

The majority of participants were aware of the most recent advancements in digital technological tools created by Delhi's GNCT and the Department of Education. Over 90 per cent of the participants thought that after COVID, the use of technology in education has risen. This demonstrates that the majority of participants thought the epidemic had increased the amount of teaching and learning mediated by technology. The majority of participants believe that in order to maintain digital advancement, digital competence is vital.

This has developed into a crucial tool for education and pedagogical improvement. Participants in the process learn on their own and offer or receive assistance as needed. Not to mention, one of the most significant benefits of using digital technology is that it helps participants improve professionally, which is crucial for their professional development.

In challenging times, teachers who are very willing to embrace technological advances always have a greater impact than those who are not. The primary factors influencing teachers' perceptions during the COVID-19 pandemic were studied by Pankaj et al. (2022) and included their attitude, contentment, and intention to continue implementing e-learning. The study discovered that teachers were happier with online teaching and learning techniques when they thought e-learning was beneficial.

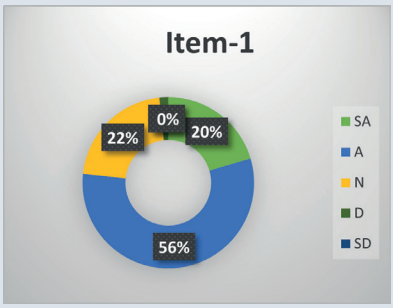
Findings for Objective -5

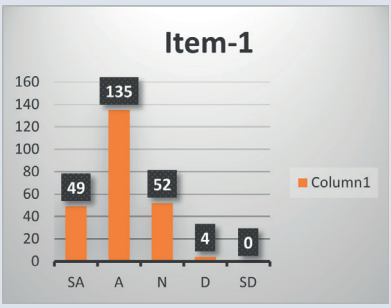
Objective -5: To study the extent of utilization of digital pedagogies in classroom teaching learning process.

The findings of these objectives revealed the outcomes which have been presented in Table figure- 6.

Table-9: Extent of utilization of digital pedagogies in classroom teaching-learning process.

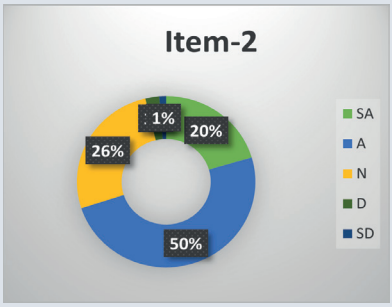
S.No.	Items	SA	A	N	D	SD
1.	I design various digitally-enabled learning activities allowing students to use problem-solving skills.	49	135	52	4	0

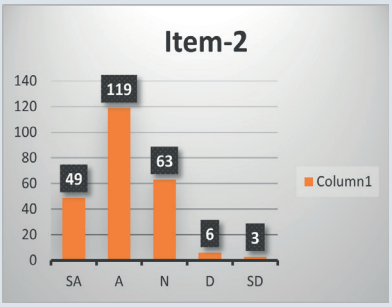




Findings for item 1 show 20 per cent of the participants were strongly agreed ,56 per cent were agreed that they design various digitally-enabled learning activities allowing students to use problem solving skills.

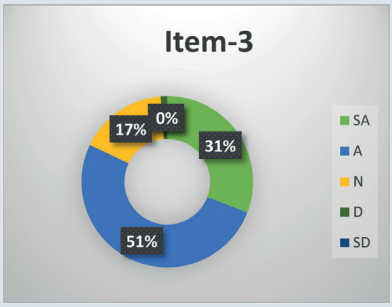
2.	I develop technology integrated lesson plans as per the TPACK Framework.	49	119	63	6	3

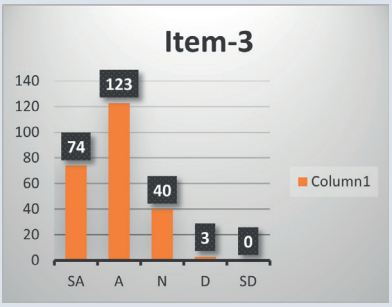




Findings foitem 2 show 20 per cent of the participants strongly agreed, 50 per cent of the participants agreed, and 26 per cent were neutral, 3 per cent disagreed, and the remaining 1 per cent strongly disagreed about the statement.

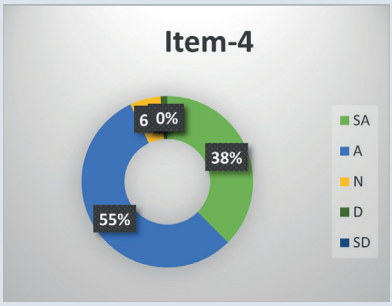
3.	I am confident in using digital technologies.	74	123	40	3	0

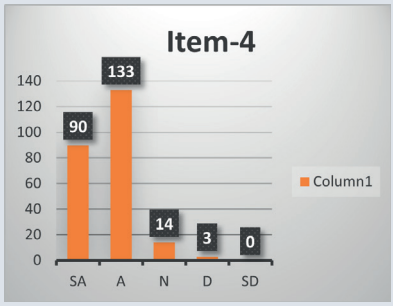




Findings for item no.3 indicates that 31 per cent of the participants were strongly agreed 51 per cent of the participants were agreed 17 per cent participants were neutral remaining 2 per cent of the participants were disagreed about using digital technologies confidently.

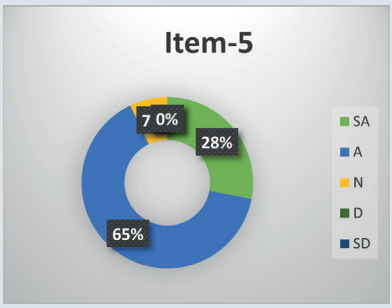
S.No.	Items	SA	A	N	D	SD
4.	I use digital technologies to communicate with colleagues.	90	133	14	3	0

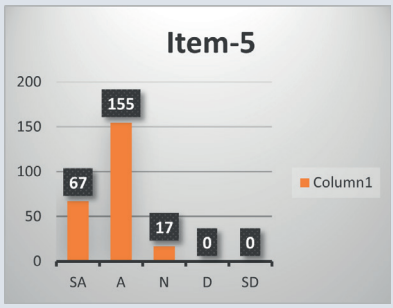




Findings for item no.4 indicate that 38 per cent strongly agreed, 55 per cent agreed, and 6 per cent were neutral about using digital technologies to communicate with colleagues.

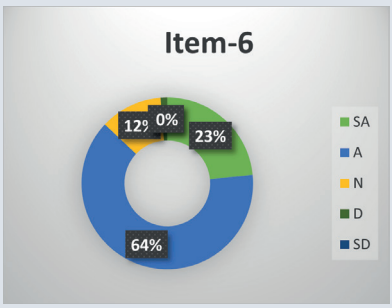
5.	I use digital technologies to communicate with learners.	67	155	17	0	0

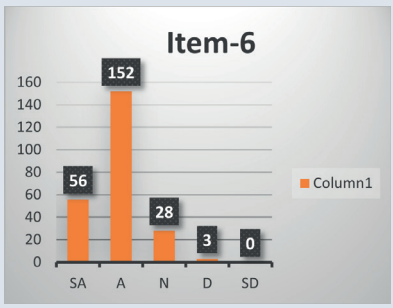




Findings for item no.5 show that 28 per cent strongly agreed, 65 per cent of the participants agreed, and 7 per cent were neutral about using digital technologies to communicate with learners.

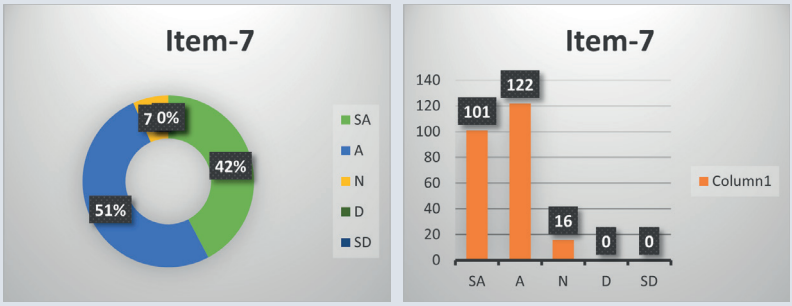
6.	I use digital technologies to communicate with parents.	56	152	28	3	0





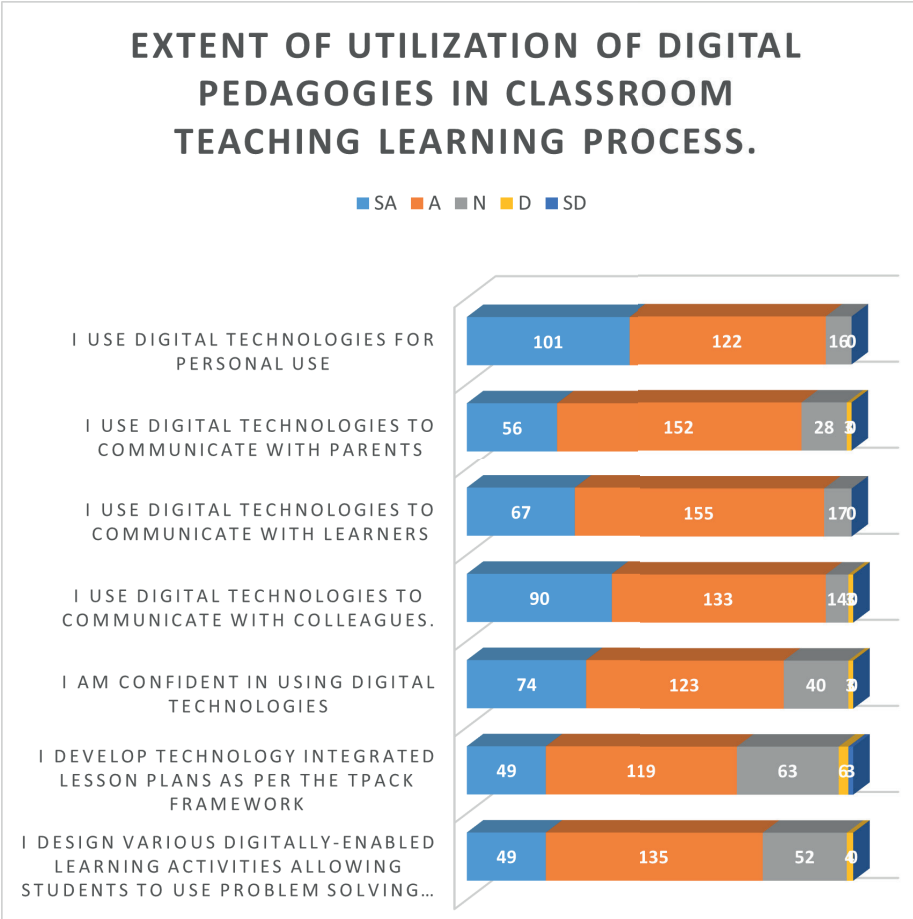
Findings for item no.6 show that 23 per cent strongly agreed, 64 per cent of the participants agreed, and 12 per cent of the participants were neutral about using digital technologies to communicate with parents.

S.No.	Items	SA	A	N	D	SD
7.	I use digital technologies for personal use.	101	122	16	0	0



Findings for item no.7 show that 42 per cent of the participants strongly agreed, 51 per cent of the participants agreed, and 7 per cent were neutral about using digital technologies for personal use.

Figure-6: Extent of utilization of digital pedagogies in classroom teaching-learning process.



The objective-wise findings indicated some of the noteworthy responses that shed light on the current state of the use of digital pedagogies in the classroom and the extent to which they are being used. The data suggested that not only students, it provides an opportunity for the teachers to design digitally-enabled learning activities according to the TPACK framework for the students. Which encourages students' problem-solving skills.

The majority of the participants were aware of the latest developments in digital technological tools developed by DoE and GNCT of Delhi. They feel confident in using those tools in the teaching-learning process.

The majority of the participants think digital competence is the need of the hour to sustain digital advancement. A very prominent feature of digital technology is revealed by the data that it has become a very important medium of communication with colleagues, parents and students. This has become an important tool for learning and upgradation of pedagogies. During the process, participants learn independently and give advice or seek advice when there is a need.

A framework for teachers to ensure the efficient application of digital pedagogy is outlined by Bed, Prasad, and Dhakal (2023). This study underlines how important it is to give our teachers access to the most recent digital tools in order to ensure that the needs of the students are met.

Last but not the least a very important feature of utilization of digital technologies is that it is very helpful for the professional development of the participants which is essential for their professional growth.

Conclusion

In order to determine the degree of its use, this study examined how Trained Graduate Teachers (TGTs) incorporate Digital Pedagogy into their classroom instruction. The results highlight how important digital tools are becoming in learning environments, and TGTs are being adopted in different ways. A more guarded engagement was shown by some teachers, while others showed a smooth incorporation of digital pedagogical practices.

The study emphasizes the necessity of focused professional development initiatives to improve TGTs' digital competencies and promote a more consistent and efficient application of digital pedagogy in a range of educational contexts. The report also highlights how crucial it is to provide TGTs with continuous support and resources in order to solve any obstacles or worries they may have when embracing digital technologies.

Understanding and improving the integration of Digital Pedagogy among Trained Graduate Teachers becomes essential as education continues to change in the digital age in order to provide a dynamic, inclusive, and technology-driven learning environment. The present study provides significant contributions to the current discussion regarding the efficient utilization of digital tools in teaching-learning, thereby opening the door for further developments in instructional design.

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