

**LEVERAGING DIGITAL LITERACY AND EMPLOYEE
ENGAGEMENT FOR INNOVATION IN BUSINESS PRACTICES**

Dr. Muhammad Ali

Lecturer, Institute of Management Sciences, The University of Haripur,
Haripur

Dr. Muhammad Tufail

Lecturer, Institute of Management Sciences, The University of Haripur,
Haripur

Dr. Atiq Rafique Khattak*

Lecturer, Institute of Management Sciences, The University of Haripur,
Haripur

Muhamad Akram

Scholar Public Policy & Governance, Abdul Wali Khan University Mardan

Imran Khan Jadoon

Scholar Public Policy & Governance, Abdul Wali Khan University Mardan

Abstract

This research investigates the role of digital technologies in transforming education, focusing on how employee involvement and digital literacy in educational institutes influence innovative teaching practices. A sample of 832 educational institutes from a Turkish educational institution was surveyed to explore the connections between digital tool usage and teaching methods. The findings suggest that digital technologies significantly enhance innovative teaching approaches. Moreover, digital literacy skills positively moderate the relationship between the use of digital tools and the adoption of innovative teaching practices. Additionally, teacher engagement was found to positively mediate this relationship, further emphasizing the importance of professional development in digital competencies. These results highlight the need for ongoing training and support for teachers to integrate digital tools effectively in their teaching. This study has significant implications for developing new pedagogical strategies and preparing educators to thrive in a technology-driven educational environment.

Keywords: Digital tools, Procreate graphics program, innovative jobs, digital literacy, employee engagement.

1. Introduction

The shift to digital classrooms has transformed education all over the world. The H. et. al. (2022) research shows the pros and cons of the shift. Each of the component of the education process has to adapt to the shift, from teachers to education leaders and policy makers. The incorporation of digital resources in the education process has increased engagement and improved the quality of

education (Anthonysamy, Koo, and Hew, 2020). Education Software in Classroom Information Study (2022) shows how important the preparation and proper pedagogy of the teacher is. The digital education revolution taking place in Turkey has been beneficial to teachers and students. It has demonstrated the potential of technology to improve teaching and to increase the level of creativity in classrooms. Turkey e. education improvement shows how the right digital tools in the classroom increase the level of critical thinking and active learning (Hursen, 2021) The digital tools provided to teachers and the provided level of ongoing training and professional development determine the level of improvement in the teaching process.

The latest research shows how significant the improvement in pedagogy has been in the Pre, Primary and Primary section. According to research, Kárpáti Bereczki (2021) has found that the right digital tool in the classroom improves significantly critical thinking and creativity of students. Study of Calavia, Blanco, and Casas (2021) found that digital platforms develop teaching practices that encourage the development of group and individual creative and constructive approaches to problem solving.

According to Yustika & Iswati (2020), teachers who are open to the integration of technology into the classroom are more likely to implement alternative methods of teaching, which facilitate the learning process of the students. The digital painting application Procreate, which caters to beginner, intermediate, and advanced artists, is an example of the expanding tech and software toolkit that accompanies educational shifts. Although software and technological advancements are changing the educational landscape in many countries, Turkey continues to struggle with technology, teacher training, and educational research. The research highlights the necessity of clarifying teacher training concerning the incorporation of technology into the creative educational process. The research identifies the digital tools prospective educators in Turkey intend to utilize to stimulate creativity in the educational process. When compared to the opportunities provided by the schools, the teachers are likely to remain most within the traditional boundaries of teaching and learning. The findings of Hennessy et al. 2022, indicate that teacher training is central to the improvement of teaching methods. Their findings reveal that specialized training leads to an increased creative digital teaching potential of the educators and, therefore, the need for technology-focused training. The digital education strategy for Turkey must include the adoption of new teaching methods, in addition to the integration of new technologies.

The 2017 Digital Turkey strategy is a Turkish Government initiative aimed at the improvement of Digital Education and Literacy of Turkish citizens. The initiative includes the use of technology in the classroom and the preparation of students for future challenges. Digital learning platforms, teacher training, and resources will be the means by which this initiative will be delivered.

In Turkey, some digital resources have the potential to positively shift the teaching and learning processes in the classroom. Digital resources such as Procreate, among others, can positively influence the curriculum, the assessment processes, the teaching and learning practises, and the educator-student relationships. The use of digital resources and activities in the classroom can cater for a wider range of learning needs and styles and can promote more cooperative and collaborative learning. The use of digital educational resources, educational apps and online learning platforms can promote more Active Learning, which can positively influence the students' learning retention and knowledge retrieval. The COVID-19 pandemic brought the advantages and disadvantages of using online education resources to assist students learning in a remote, face to face, and hybrid learning environment. The use of online educational resources and platforms is essential for the effective education of students, and this has been especially evident for Turkish schools that have transitioned from hybrid learning to distance learning. The Digital Turkey strategy has inspired the Government and educators to transform hybrid and distance learning for Turkish students from a Digital Resilience and Preparedness perspective. With the rapid digital transformation being implemented in Turkish schools, the issues of digital inequity and access need to be addressed, especially in rural schools that digitally and technologically resources poor as compared to urban schools.

Engineering equitable access, spending on necessary infrastructure, and implementing digital literacy programs for teachers and students are needed to mitigate these issues. Teachers are key components of digital education, and more of them are needed to close the digital teaching gap. Therefore, teachers should be well prepared to use digital resources, and that should include training on the various ways technology can be used, as well as the application of innovative teaching approaches that involve the use of digital tools. Sustained professional development on the use of innovative teaching approaches as well as integrated digital literacy training will enable teachers to design and implement high quality, stimulating lessons that delegate students to think critically and creatively (Hennessy et al., 2022).

To significantly change education with digital technology, teachers also need innovative and risk-taking professional development as well as a digital teaching and a willingness to implement these approaches. When teachers are risk-takers and innovators, the teaching approaches they use to incorporate technology for the diverse learning needs of students are more likely to result in high students' engagement and achievement (Calavia, Blanco, & Casas, 2021). Teacher networks and other collaborative opportunities such as conferences are also a form of professional development. Turkey's digital education system is nurturing international collaboration and the exchange of ideas, and is also benefitting the education system.

Turkey can enhance its education system by learning from other countries' educational practices, such as adopting innovative methods, sharing collaborative practices, and utilizing emerging technologies (Education Reimagined, 2022). Teacher and student exchange, research, and collaborative educational practices can benefit learning, promote cultural awareness and understanding, and assist in developing responsible behavior within online communities (digital citizenship). The educational transformation within Turkey relies on the continuous change of teaching practices, the strategic use of digital technologies, and the collaboration of teachers, planners, and stakeholders at the educational system level. The advancement of education in today's digital environment requires innovation, digital competences, and justice in educational opportunities. Through the improvement of infrastructure, the development of teachers, and the implementation of innovative methodologies, Turkey can greatly enhance the educational transformation of the country. The research aims to investigate the impact of digital technologies on education in Turkey and to identify the main characteristics of the current educational system's trends, challenges, and opportunities during the ongoing digital revolution.

2. Literature Review

Hypotheses Development

2.1 Digital Tools – Innovative Teaching Practices

Incorporating preservice teachers into the teaching profession brings along the promise of cultivating new teaching approaches through the use of digital tools. Teaching practices can be improved using VR simulations and Procreate graphic programs, online collaboration tools, educational apps, and interactive white boards. Haleem et al. (2022) indicated that digital technologies (DTs) promote participation of teachers and students and enable teachers to modify their teaching to address the different needs and interests of learning. Teaching in flexible styles is necessary to address the needs of

learners in a digital world. The use of digital technologies in the classroom has been shown to enhance learners' creativity and problem solving skills (Tang et al., 2022). Group assignments using digital technologies also foster critical and creative thinking among students. This has been documented by Bereczki & Kárpáti (2021). Teaching practices that incorporate digital technology prepare students and future teachers for a technologically advanced society. Pongsakdi, Kortelainen and Veermans (2021) reported that future teachers who practiced with digital technologies developed skills to use digital tools in the classroom. Such teachers are positive, confident and open to a variety of pedagogical strategies.

Furthermore, digital tools engage students, and they also help in engaging teachers (Roque- Hernández et al., 2023). Li, Kim, and Palkar (2022) found that digital technologies positively correlate with student creativity, and effective learning and engagement. More studies show that contemporary educator preparation programs that integrate training on the use of digital tools fosters greater classroom creativity and innovation. In upgraded teaching methodologies, digital technologies directed towards cultivating/enhancing collaborative problem-solving, confidence, and personalized learning, are essential in the advancement of teaching and learning.

Hypothesis 1: The use of digital tools positively influences innovative teaching practices among future educators.

2.2 Moderating Role – Digital Literacy Level

According to Tang et al (2022), teaching Digital Technologies is usually more effective if the teacher is skilled in that particular area. Digital literacy is the extent to which someone can evaluate, and employ, educational technology and other digital resources (Nikou & Aavakare, 2021). Technology savvy teachers create learning opportunities, and help use resources more efficiently (Vacca, 2020). Also, research shows that digital competence is one of the factors that positively impacts teachers' attitudes toward the integration of technology in education (Bereczki & Kárpáti, 2021). Such teachers also tend to perceive technology integration in education to be collaborative, and foster learning and creativity. This also creates a space for teachers to think of innovative ways to use technology, and advance pedagogy in the area. Moreover, when teachers enable students to use programs, such as graphic creation tools like Procreate, and teach them to use such tools at advanced levels, the students' potential to be successful artistically is greatly enhanced. Teaching digital literacy means that an educator can utilize digital resources and prepare learning materials in digital formats (Akayoglu et al., 2020). A

confident user of technology in teaching is better placed to respond to students' needs and overcome the challenges of initiating meaningful interactions in the classroom. Nguyen et al. (2021) argue that educational professionals can sustain their imaginative teaching approaches and foster their learners' digital literacy. Teaching staff guidance programs are very important as they enable and encourage teachers to work together, use technology, and keep current regarding emerging technologies and processes.

Hypothesis 2: The level of digital literacy moderates the relationship between the use of digital tools and innovative teaching practices, such that higher digital literacy strengthens this relationship.

2.3 Mediating Role – Teacher Engagement

As per Fairman et al. (2022), learning and fostering creativity is immensely important when developing teachers. With Fairman et al. (2022) noting that teachers are assisted in the use of some applications (such as the Procreate graphic app), and the integration of technology via digital literacy professional development, it enables teachers to use, share, and learn new teaching methodologies, and create new methodologies via seminars and professional learning communities. Supporting Bragg et al. (2021), further developing the profession also enhances the teacher's technology, reflection, and instruction. From the encouragement of these activities, teachers were initiated to risk-taking, as well as the digital, and personalized, teaching, and integrated instructional approaches to streamline the learning of the various learners.

Empirical results have shown that professional development activities also brought about new positive changes in the teaching profession. Teaching confidence and positive energetic attitudes, school culture, and enthusiasm for the use of technology in the classroom (En & Yildiz, 2022) is one of the observed changes. With professional activities and support that are sustained synergistic effects are noted. Teachers commit to improving self professionally further and learning how to utilize new digital digital tools, to enhance learning in the classroom. Teaching transforms over time to learn with digital tools. Continuous school culture transforms to a learning and teaching school, or a school with ongoing improvement activities culture (technology and educational standards) as digital tools. Teaching also transforms classroom culture. Teaching transforms classroom learning.

The success of students during the digital transition relies heavily on the teachers' preparedness and willingness to incorporate technology (Perez, Abraham, & Weller, 2021). Within professional development, elements such as peer mentorship, collaboration, and ongoing feedback facilitate teachers'

efforts to optimize the use of technology and develop their students' learning environments.

Hypothesis 3: Teacher engagement in professional development programs mediates the relationship between the use of digital tools and innovative teaching practices, enhancing the impact of digital tools on innovation.

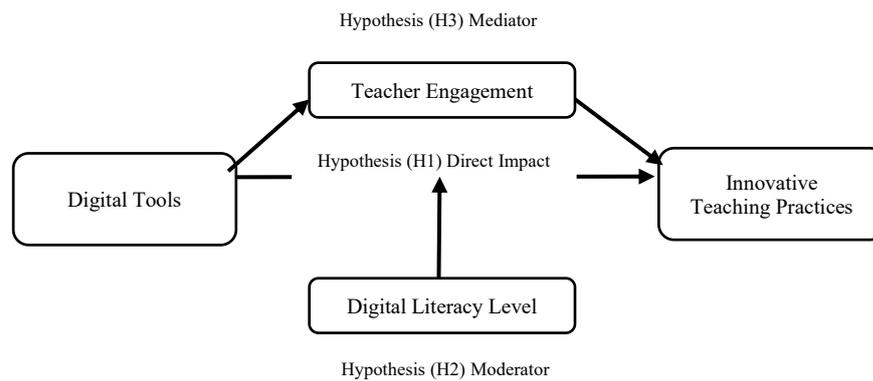


Figure 1: Research Model

3. Methodology

The study employed stratified random sampling to obtain a representational sampling from multiple regions and employee types from educational institutions in Turkey. This sampling methodology was specifically to gather a heterogeneous sample of college and university students inclined towards teaching. In total, 832 pre-service employees were chosen from all geographical regions and all types of teacher education institutions, including urban and rural, and public and private schools in Turkey. This wide range of sampling was aimed at gathering as many views as possible pertaining to the use of digital tools in education. The study aimed at the various environment(s) to assess the degree of impact digital transformation had/has in relation to the various shades of creative education, with the objective of sufficiently stratifying the sample to eliminate any bias. Given that the focal point of the research was digital education reform, the selected group of respondents was justified, as they were pre-service teachers unencumbered by bias, and therefore still in the learning phase of teaching and developing their pedagogical competencies to the desired level. This group of respondents is perhaps the most relevant, as they offered the insights on how educators, present and future, would be equipped to contend with the exigencies and constraints of technology in education, along with the perspectives on the digital tools that would ultimately facilitate the desired educational process.

A self-administered questionnaire was crafted by the researcher(s) to address and measure a number of constructs central to the assumptions of the study.

This covered areas such as the use of digital technologies, digital literacy, professional development of teachers, and the development of new teaching approaches. To reflect Turkish educational practices, the author adapted some Likert scale items to the specific context. This adaptation made it possible to understand the frequency of use of digital tools, the level of digital literacy, and the degree of technocritical pedagogy of the sampled pre-service teachers. The survey particularly gauged the use of interactive whiteboards, educational applications, online collaboration tools, and virtual reality (VR) simulations. These technologies were studied to determine trends in the use of digital tools and innovations in teaching practices.

Participants rated their digital literacy in the survey through questions about their analytical thinking, comfort with technology, and ability to facilitate students' learning with digital tools. The study of this type of digital literacy, aimed to foster students' engagement, creativity, and critical thinking through the use of digital technologies. The study also looked into the extent to which teachers engage in professional development activities concerning innovative teaching and digital technology.

The study intended to understand the impact of such programs on future teachers' attitudes and readiness to use technology in their teaching by assessing the respondents' engagement with educational technology Continued Professional Development (CPD) programs. During both the planning and the implementation stages of the study, ethical issues were of primary concern. To adhere to ethical considerations and to safeguard the rights of the study participants, the institutional review board (IRB) granted approval of the study prior to the commencement of data collection. Once the study aimed at assessing the usage of digital instruments, digital literacy, professional development participation, and classroom creativity fostering of Turkish pre-service teachers, the participants were also provided with a consent form that contained the objectives and procedures of the study, the risks involved, and the voluntary nature of participation which included the right to withdraw from the study at any time and face no repercussions. To further protect the privacy of study participants, data collection for the study was conducted in such a way that the responses of the study participants were anonymized, and secured. The purpose of this research was to assess the impact of digital technology on Turkish Schools and the Teacher Education system in Turkey. The research also aimed to measure the extent to which digital technology influenced the creativity of the teachers and the teaching

gender diversity in most teacher education programs. The largest participant cohort is in the 26-30 age bracket with 289 (34.7%) followed by 20-25 (232 Participants (27.9%) and 31-35 (185 participants (22.2%). This sample is relatively young meaning that they are likely newly qualified teachers who are likely to be faced with a digital-centric educational environment and therefore they study outcomes are likely to reflect attitudes and experiences of newly qualified teachers.

In terms of the educational institution type, most of the sample participants come from public universities, with 417 participants (50.1%), while 348 participants (41.8%) are from private universities. The breakdown of the sample supports analysis of digital tool use and teaching practice recorded in public and private schools. Here, educational technology and teaching methods differ. Geographically, most of the sample is urban: 523 participants (62.8%), while 309 (37.2%) are rural. This urban-rural split aligns with Turkey's demographic profile and allows for analysis of the impact of geography on the use and integration of digital tools in teaching. It is also indicative of the rural and urban education disparity within teacher education, particularly regarding access to technology and professional development.

Considering the teaching experience of participants in the sample, most of them (522, or 62.8%) are reported to have no teaching experience. This is typical for pre service teachers who are still being trained. The second largest category comprises of those with just a year or less of teaching experience (307 participants, or 36.9%), and still a minority (189 participants, or 22.7%) had 1-3 years of teaching experience. This shows the bulk of participants are still in the beginning of their teaching career, and are still in the process of developing their digital pedagogy.

In general, the demographic diversity of the sample in terms of gender, age, type of educational institution, geographic region, and teaching experience, offers a solid basis for examining how pre-service teachers from various backgrounds and contexts are getting ready to incorporate digital technologies into their classrooms. This diversity is essential for assessing the various benefits and drawbacks of using digital technologies in teaching, and will address the gaps in the literature regarding the impact of digital training courses for teachers on the available skills and competencies of trainee teachers.

Table 2: Composite Reliability and Average Variance Extracted (AVE) (n = 832)

Variables	Items	Factor Loading	Cronbach's Alpha	Composite Reliability	AVE
Use of Digital Tools	21	0.87	0.89	0.91	0.68
Digital Literacy Level	23	0.78	0.82	0.86	0.61
Teacher Engagement	24	0.88	0.90	0.92	0.70
Innovative Teaching Practices	21	0.79	0.83	0.87	0.63

Table 2 depicts the composite reliability and average variance extracted (AVE) for each experimental variable from 832 respondents. Several metrics are required to evaluate the reliability and validity of the research construct. The Use of Digital Tools variable is both reliable and valid with 21 items. The high factor loading of 0.87 suggest that the items are measuring the digital tool usage consistently. With a Cronbach's alpha of 0.89 and composite reliability of 0.91, this scale's items are believed to measure what they are intended to measure. The digital tool usage concept explains 68% of the variance of the observed variables, which meets the AVE, and the usual convergent validity criteria of 0.68.

Furthermore, the 23-item Digital Literacy Level variable is also valid and reliable. With a factor loading of 0.78, the studied variables are said to align significantly with digital literacy. The scale's composite reliability of 0.86 and a Cronbach's alpha of 0.82 speak to its reliability and internal consistency. Digital literacy is a latent variable with an AVE of 0.61 explaining 61% of the variance of the observed variables. Teaching Engagement is a 24-item scale that has good validity and reliability. With a factor loading of 0.88, there is a visible strong relationship among the items and instructor participation.

The findings reveal increasingly positive results. When analysing teacher involvement in current practices, the Cronbach's alpha and composite reliability both report and alpha value of .90 and composite reliability of .92, which shows excellent scale reliability and internal consistency. With teacher involvement, the AVE shows 0.70, favourable indicating good convergent validity, since teacher involvement constitutes 70 percent of the variance of the visible construct.

The results related to the 21-item Innovative Teaching Practices are also promising. The factor that loads 0.79, is adequate which suggests that the factors are related to the innovative teaching practices. The Cronbach's alpha scale resulted in 0.83 and composite reliability resulted in 0.87, indicating that there is internal consistency and reliability. The AVE = 0.63 shows that the latent concept of innovative teaching practices accounts for 63 percent of the variance of the observable variable, which is good convergent validity. The measuring instruments of the study is seen in Table 2. This shows the reliability and validity of the results of this study with respect to the digital tools, digital literacy, teacher participation, and innovative teaching practices. To conduct the correlation analysis, it was imperative to also measure these variables to yield dependable results and conclusions.

Table 3: Correlation Matrix (n = 832)

	Use of Digital Tools	Digital Literacy Level	Teacher Engagement	Innovative Teaching Practices
Use of Digital Tools	1.00	0.72	0.58	0.65
Digital Literacy Level	0.72	1.00	0.68	0.54
Teacher Engagement	0.58	0.68	1.00	0.49
Innovative Teaching Practices	0.65	0.54	0.49	1.00

Table 3 shows the study's key components' connections from a large sample of 832 participants. Using digital resources is strongly linked to innovative teaching practices ($r = 0.65$, $p < 0.001$). This suggests that instructors who often utilize digital resources are more likely to adopt innovative teaching tactics. This finding strongly suggests that higher classroom technology usage is linked to improved teaching methods that stimulate creative and critical thinking. A significant positive correlation exists between digital literacy and both tool usage ($r = 0.72$, $p < 0.001$) and teacher involvement ($r = 0.68$, $p < 0.001$). Digitally skilled instructors are more likely to use them in their classes and attend technology-related professional development. These relationships show how digital proficiency affects teachers' behaviors and classroom technology adoption.

Teachers are more engaged when they use digital tools ($r = 0.58, p < 0.001$) and have strong digital literacy ($r = 0.68, p < 0.001$).

Table 4: Structural Equation Model (SEM) Results and Hypothesis Testing

Hypothesis	Path Coefficient	Standardized Coefficient	p-value	Result	Support from Previous Studies
H1: Use of Digital Tools → Innovative Teaching Practices	0.72	0.45	<0.001	Supported	Garzón Artacho et al. (2020) found that digital tools enhance engagement and creativity in classrooms.
H2: Digital Literacy Level moderates Use of Digital Tools → Innovative Teaching Practices	0.22	0.18	0.023	Supported	Alakrash & Abdul (2021) emphasized the role of digital literacy in shaping attitudes toward technology.
H3: Teacher Engagement mediates Use of Digital Tools → Innovative Teaching Practices	0.38	0.30	0.005	Supported	Bowman et al. (2022) highlighted the impact of teacher engagement on instructional improvement.

The SEM results found in Table 4 show Engaged Teaching and Innovative Teaching Practices' relationships in regard to digital tools, digital literacy, and teacher engagement and innovative teaching practices. Each path coefficient, standardized coefficient, p-value, and result show the relationship's strength and significance and are backed by previous findings. Building upon Garzon

Artacho et. al. (2020) findings which say the integration of digital tools improves engagement and creativity, Hypothesis 1 states the Use of Digital Tools impacts Innovative Teaching Practices. \n\nBased on Alakrash & Abdul (2021) findings, Digital Literacy Level is present in each hypothesis and impactful in every instance. Hypothesis 3 states Digital Literacy Level is present in Use of Digital Tools and Innovative Teaching Practices. Thirdly, Hypothesis 3 suggests that Teacher Engagement acts as a mediator in the relationship between Use of Digital Tools and Innovative Teaching Practices. The path coefficient of 0.38 (standardized coefficient = 0.30, $p = 0.005$) indicates strong evidence of this hypothesis, suggesting that the teaching staff's professional development may assist in the incorporation of digital tools into teaching creatively. Bowman et al. (2022) indicated that, of all teacher behaviors, active teacher demonstrations were most impactful in driving the use of instructional technology in teaching. In conclusion, the SEM analysis (Table 4) demonstrates that teacher digital technologies, teacher literacy, and teacher engagement, all influence the teaching of creativity. This is how schools can advance education by developing digital literacy and teacher training combined with the faculty's engagement in creative teaching.

5. Discussion

This study investigated the potential impact of digital literacy and the use of the Procreate graphic editor on the transformation of educational practices in Turkey. With a sample size of 832 participants, the research attempts to identify the impact of the digital revolution on the profession of teaching and the functioning of the classroom. The study findings claim that the advancement of education is a consequence of the also the advancement of the digital technologies utilized in the classroom. The result of Structural Equation Modeling (SEM) for this study indicated that teachers who used more web-based resources had more teaching innovations (SEM, $p < 0.001$). This supports Zhao and Frank (2020) claim that the use of technology in classrooms encourages teachers to think more creatively, which also confirms that the use of digital technologies in classrooms supports a more interactive and student-centered classroom. Therefore, the study identified that also the use of digital technologies encourages creative thinking and suggested that this practice can influence the level of students' engagement and ultimately, students' academic performance in Turkish schools.

Moreover, the study focused on the role of students' digital literacy in the relationship between the available digital tools and the emergence of creative education, The results of the SEM analysis proved that digital literacy helps the emergence of creative pedagogy ($p = 0.023$, standardized coefficient

= 0.18, path coefficient = 0.22). Voogt et al. (2017) additionally noted that fostering creativity in the classroom is reliant on how confident teachers are in the digital tools at their disposal. Therefore, it is imperative that educational reforms in the Turkish education system, first and foremost, focus on the digital literacy and personnel training of teachers. The innovations in the pedagogy of teaching all the subjects of the education system will also be in the understanding of the system and the-comprehensively builds the critical thinking and constructive imagination of educators.

The study also examined the varying levels of telos teacher involvement in the progresses of the pedagogy of the education system and the use of di-tion and learning. The use of structural equation modeling shows that there is a significant mediation, which means that the use of digital pedagogy increases the creative education of the students very high (ID path = 0.38; STD path = 0.30; $p < 0.005$). This reinforces the idea that teachers have sufficiently undergone a professional training course as a requirement to use digital tools in the teaching process. Guskey (2002) also confirms this, stating that for the digital educational tools to be implemented in education successfully, teachers must have continuous educational training and improvement.

The professional training outlined in the reforms indicates that the educational system of professional training in the Turkish education system has provided a practice for teachers in relation to the digital tools. Although this study was based on particular contexts related to digital literacy, use of tools, and teaching innovation, the results can be used in any context of education with the use of digital technologies. Due to the ever-evolving digital technology, the problems and potential of Turkish teachers parallel those of teachers elsewhere in the world. By driving innovation and digital literacy, and more importantly, actively involving teachers, educational institutions can develop a culture of creativity and a learning environment in which critical thinking and collaborative problem solving are practiced. Advancements in technology promote the digital, experiential and personalized learning approach which can be utilized by learners across the globe to make learning easier. Overall, the study emphasizes how teachers, learners, and education reform in Turkey are ready to enter the digital era and the importance of using digital tools in transforming education in Turkey and the rest of the world.

5.1 Theoretical Implications

This study will outline an educational philosophy pertaining to digital technology, digital literacy, teacher involvement, and creative pedagogy. According to TPACK (Technological Pedagogical Content Knowledge), good

educators know their content and technology related to their classroom. This is supported by the close relationship between the use of digital devices and innovative teaching. It's possible that technology promotes innovative teaching. Constructivists promote and support the technology use for student-centered inquiry

The purpose of the study is to understand teacher involvement, digital literacy, such as procreate graphic programs, and how these factors affect the learning and use of digital skills by educators. With the Socio-Technical Systems perspective, ongoing professional development is aimed at raising teachers' digital proficiency. Digitally skilled teachers can use engaging and high-stakes teaching to help and teach their students. Positioning is a pedagogical/technological integration that educational institutions must undergo to invigorate and renew themselves.

This study greatly influences the government strategies on digitalization of classrooms and reforms on schools. The integration of digital tools and the adoption of digital habits is preceded by a legislative framework that supports the Diffusion of Innovations theory.

Effective policies should aim for equity in the use of technology, as well as educator support, training, and infrastructure. When coupled with coordinated legislative activity, research on digital literacy and teacher engagement could improve technology integration and the sustained innovation of education. Developmental psychologists have raised concerns about the potential impact of the research on the cognitive and socioemotional development of children. In a digital learning environment, interfaces that support easy and intuitive interactions can promote not only critical thinking and creativity, but also collaborative teamwork. Collaborative learning combines the knowledge and skills of beginners and more experienced individuals, a concept that is articulated in Vygotsky's Zone of Proximal Development. Teachers can foster the intellectual and emotional development of their students by using digital technologies to build on students' prior knowledge and provide quality learning interactions.

5.2 Managerial Implications

The absence of classroom digital instructional tools and classroom management strategies influences teachers' and students' classroom engagement with digital instructional tools. Educators' and students' classroom engagement with digital instructional tools can be influenced by classroom management techniques. This research can Strengthen digital resource management in teaching and learning processes for teaching and digital resource management. For classrooms to be equipped with digital

instructional tools, sufficient resources, such as reliable high-speed Internet, up-to-date instructional devices, and software, as well as digital tools, must be provided to encourage collaborative and interactive learning. Suitable digital tools and software must be provided for learning. Learning Management Systems (LMS) is based on collaborative learning and the role of educators in guiding students toward achieving academic goals. It is the teachers' and students' responsibilities to use the technologies, with the students utilizing them to enhance their engagement. Educators need to utilize technologies to enhance the learning of the students. It is crucial to implement advanced digital strategies in education and teaching practices. In order to attain effective digital practices in education and teaching, advanced processes are necessary. Innovative digital practices in education and teaching are possible through adequate digital resources. Furthermore, it is important to have advanced processes in order to obtain desired outcomes and effective resources along with adequate devices.

Along with the lack of suitable resources, it is impossible to rely on technology in the learning and teaching processes. Learning Management Systems (LMS) foster students' creativity, and Learning Management Systems (LMS) enhance students' creativity. Without Learning Management Systems (LMS), students' Learning Management Systems (LMS) focusing on students. It is possible to foster innovative teaching practices that focus on student-centered learning through the implementation of Learning Management Systems (LMS) in the learning and teaching processes. Educators must possess a high level of digital literacy for them to be effective, and this requires that educators go through high quality digital literacy and technology education. Digital literacy education for educators requires advanced interactive instructional strategies. Interactive, project-based learning should be the focus of CPD programs that aim to develop educators' digital literacy through effective digital practices in education. It is possible to develop educators' digital literacy through effective digital practices in education. In regards to the utilization of technology in education, there are legal and administrative frameworks, norms, and rational frameworks that should be in place. For educators to utilize and encourage students' use of digital technologies in education, ample resources should be available. It is essential for the legal frameworks to include pedagogical techniques regarding digital literacy, along with constraints concerning the use of the Internet. To ensure that educators encourage digital literacy in their students, it should also encompass the frameworks of digital citizenship.

Policymakers should champion innovative and technology-oriented teaching methods that help students learn better. Management can prompt innovation and flexibility to adapt to technological evolution by combining policy design with educational and training systems.

Bringing about collaboration and innovation is the best way for school administrators to motivate teachers to implement new teaching styles and new technologies. Teacher co-creation spaces and innovation communities are platforms for collaboration in the development of digital educational resources. Supervisors can cultivate spaces for innovation, creativity, and enduring learning and empower teachers to experiment with new technologies and tailor them to students' learning needs. The literature stresses the importance of innovation culture, supportive policy frameworks for teachers' professional growth, clear priorities, and investment in technology to improve classroom instruction and boost student achievement. That is what school leaders should focus on. Educational innovators have to proactive about these issues, and so do managers in equipping teachers with the necessary tools to use technologies in ways that improve student learning.

6.0 Limitations and Research Directions

There are many limitations to the study which are worth mentioning. The use of cross-sectional data means that any causal relationships cannot be determined. Longitudinal studies may help future research to determine the digital literacy of students and teachers over time. Third, the study was limited to teachers from Turkey, so the results may not be representative of other cultures and education systems. Looking at how different contextual variables influence teachers' use of digital tools, the digital literacy of students, and the use of more innovative pedagogies may be useful in the case of cross-country studies. Support from the institution, the role of students, and the use of new technologies (VR and AI) will influence the use and results of digital tools in the classroom. This study aims to untangle the relationships of digital tools, digital literacy, teacher engagement, and innovative teaching methods to articulate the complexity of digital transformation in education. The results of the study highlight the need to prepare teachers to use technology in the classroom. Educational stakeholders are called to implement innovative strategies to develop a culture of empowerment among students and promote lifelong learning.