

AN EXPLORATION INTO THE TEACHERS, PREPAREDNESS FOR DIGITAL PEDAGOGY IN SECONDARY SCHOOLS, DISTRICT SWAT KHYBER PAKHTUNKHWA

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ABSTRACT

Amidst the growing digitalization of the education sector where digital teaching and learning is transforming the future of education in the globe, there is a need to comprehend how well the teachers are prepared to take up the digital pedagogy-2 transferred to the teachers especially in the underserved areas. The proposed qualitative research studies the readiness of secondary school educators in District Swat, Khyber Pakhtunkhwa, in the realm of adopting digital teaching in their classrooms. The study provides the interpretation with the help of semi-structured interviews with 15 teachers in both public and privately owned scholarly organizations and reveals a complicated interaction between infrastructural constraints, the absence of professional preparation, psychological factors, and the role of school administration. Although the majority of the respondents indicated the lack of support and small professional growth in the field of digital teaching, most of the participants also revealed their resourcefulness through independent adaptation to the technological needs, having developed their informal coping mechanisms. The investigation demonstrates that digital readiness does not entirely rely on access to a technology, but it is firmly embedded in local challenges, teacher self-motivation, and assistance provided by institutions. The results clearly indicate that there is an absolute necessity of special training, infrastructure development, and leaders so as to close the digital gap that exists within the education sector of Pakistan. The study, therefore, provides the field of education with new material on educational equity and digital inclusion, and its output can be used by policymakers, teachers, and other stakeholders to support the need to transform conventional classrooms into digitally enabled learning environments.

Keywords: Digital pedagogy, teacher preparedness, secondary education, digital transformation, educational technology.

INTRODUCTION

The reflection of digital pedagogy has become one of the key factors in modern 21 st century education as educators across the world have had

to modify their teaching practices to fit the needs of a fast-changing digital era. Within the specific context of Pakistan and specifically within the

semi-urban and rural environment of District Swat in Khyber Pakhtunkhwa all this transition has also brought in its wake some promising opportunities and major challenges. Although more support has been provided directly to educational technology at policy levels, the readiness of secondary school teachers to respond to the application of e-teaching strategies on an effective level is both uneven and not widely studied (Barnes et.al, 2024). Along with the basic computer literacy, teacher preparedness in dealing with the teaching of digital instructions is much broader. It summarizes a deep knowledge of the intersection of technology and pedagogy and subject content, an idea universally understood as the Technological Pedagogical Content Knowledge (TPACK) paradigm (Ranjan et.al, 2025). In Swat where many teachers continue to use traditional instructional strategies in their classroom, the possibility of using the digital tools effectively depends not only on the professional competence of the teachers but also on the presence of institutional support systems.

Several socio-cultural and infrastructural constraints make this transition rather complicated. Lack of access to reliable internet, inadequate ICT training, and the lack of continuous technical support are among the various barriers that many secondary school teachers in the region have to deal with (Iqbal et.al, 2025). Such constraints do not only discourage the trust of the teachers but are also responsible in forming their opinions regarding the relevance and feasibility of digital pedagogy. Moreover, literature indicates that unless a context-specific capacity-building program is given, the actualization of technology in schools does not necessarily translate into real education (Petrillo et.al, 2024). Hence, this qualitative research would endeavor to investigate the range of teachers preparedness in digital pedagogy at the secondary schools in District Swat. Taking into consideration their lived experiences, professional realities, and contextual conditions, the research will be able to reveal the intricate institutionalizing process that determines digital teaching readiness. Finally, the results will be of good use to education planners and policy makers besides stakeholders in an effort

to bring about a more inclusive and efficient digital education system in Pakistan.

In the District of Swat, this is the case, as a large number of the teachers in the secondary level institutions join the teaching profession without experience in structured digital teaching systems. The problem is that due to a lack of formal preparation, the teaching practice is inconsistent and certain instructional methods are based on out-of-date practices (Gohar et.al, 2025). Furthermore, the urban and rural schools digital divide keeps on increasing, and thereby restricting equal access to resources. In distant locations, by collaborating with each other, via informal experimentation or improvisation, teachers usually devise ways of coping. Citizens like the people of Swat have an untapped potential, strength and swagger in their local educational systems that remains hidden unless chronicled and interpreted in a qualitative way. Highlighting the voices of teachers, their experiences, and their methods of coping, the study envisions filling the knowledge gap and becoming the addition to the existing discussion on the agenda of providing equitable digital education to the Pakistani student population.

Literature Review

Theorizing Digital Pedagogic and Educator Readiness

Digital pedagogy is the calculated use of technology in the education and teaching profession to create better learning outcomes and engagement between the students. Compared to simple ICT use, digital pedagogy lays stress on redesigning pedagogy, student-focused teaching, and the concept of digital literacy development. In this vein, preparedness is viewed as the potential to successfully use digital tools, handle virtual learning spaces, and combine technological resources and curricular purposes (Tondeur et al., 2017). Preparedness encompasses such an aspect as attitudinal preparedness representing the readiness to employ and adapt to new educational technologies that immediately precondition the efficient implementation of digital pedagogy. Preparedness of teachers in developing nations is therefore bottlenecked by systemic issues which include poor access to training and related issues

to do with poor digitization and unsupportive leadership among the teachers in these countries (Ali et al. 2025). The gap between the reality of the digital pedagogy and the real life scenario of such rural district as Swat confirm the urgent necessity of studying scenario-related contexts with references to the real physical conditions and needs of teachers.

Besides, the model of professional development that takes an integrative approach to digital pedagogy, both on technology and pedagogical skills level, has proven successful in enhancing teachers confidence and promoting technology integration in classrooms (Voogt et al., 2015). But in most of the Pakistani government schools such programs are underdeveloped or not practiced concurrently. In that sense, the theoretical knowledge of digital pedagogy needs to be looked into locally in order to discover the particular elements influencing the preparation of teachers in high schools at Swat.

Obstacles of Digital Pedagogy in the Developing Contexts

Advancement in the digital pedagogy among the developing countries is commonly hindered by the multidimensional obstacles, especially in the interior and underserved environments such as District Swat. The major issue has to be with the unstable infrastructure of the areas, namely, the unstable internet connection, electricity, and digital gadgets that could be considered the skeletal obstacle to an online lesson (Butler et.al, 2024). At a pure access-level, any decent and well-meaning educational policies or training programs cannot yield anything significant. Also important is the lack of teacher preparation and training. The vast majority of teachers who are already working in Pakistan have not received much of any formal education in digital pedagogy in Pakistan at all, and thus being unfamiliar with how to make use of the available technology (Nuseir et al., 2022). Technology is utilized most of the time in administrative purposes only or in very basic classroom uses even in the presence of such. Significant penetration with subject specific pedagogical content has not been common especially where schools have not enjoyed

institutional backing and leadership laced with vision.

The second setback is the widespread resistance and attitude to change among the instructor who are used to the traditional methods of teaching. Such cultural inertia and fear of technology do not encourage many teachers to consider new models of digital learning (Abbas et.al, 2025). The rural population in Swat multiplies the problem in these ways: there is little contact with modern teaching conditions, little collaboration with peers, and little motivation toward innovation. Moreover, policy contradictions and top-down input-driven online projects that lack consultations at grass-root levels normally lead to a poor implementation. Main ideas that are expressed in the literature are that to ensure effective digital pedagogy, access and training are only necessary but also the provision of continued support and favourable ecosystem in which to change.

Experience and Ways to Adapt Teachers Lived

Quantitative research can focus on a deficiency of resources or training, yet qualitative research gives further insight into the personal experience the educationists give digital pedagogy with respect to the subject. Teachers often comfortably and unconsciously improvise in places such as Swat where formal training is inadequate, and lean on peers and self-instruction to bridge the gaps that do not lie in the formal training (Lateef et al., 2024). Such adaptive measures entail strong and confident mentality, which is not always examined in the general context of digital readiness. The stories told by teachers most commonly have an element of frustration mixed with the motivation, which is that they are frustrated by infrastructural and institutional limitations and driven by their desire that the students should succeed. An example of this is whereby some educators in underserved schools have found alternative ways of using smart phones and Whatstapp groups to broadcast lessons or homework to the students who do not have constant access to computers (Shohel et.al,2022). Such activities, albeit informal, are big moves towards the contextualized digital pedagogy.

One more important thing is that community involvement and local cooperation seems to be crucial in the work of digital adaptation. In Swat, learning the technology has been impeded by the lack of access to technology in certain schools. However, in other schools, teachers have begun informal workshops or shared resources with fellow teachers to find a solution (Khan et.al,2025) Such bottom-up solutions are invaluable in environments where frequent top-down attempts have had little to no impact. The professional development of policies and professional development programs are dependent on the understanding of these lived experiences so that it echoes with reality of who teachers are. Instead of the one-size-fits-all approach, it is necessary to create sustainable digital transformation applying the practices, challenges, and innovations of the teachers themselves.

Methodology

The research adopted an exploratory research setting since this design has high admiration in dealing with complex social issues like online pedagogy preparedness among teachers. The qualitative method has helped the researcher to obtain the lived experiences of the teachers, their perceptions, challenges as well as the strategies the teachers have developed to face them all in a natural setting. Because the use of digital pedagogy in rural Pakistan has not been covered and particularly not in the case of District Swat, the design was chosen to enable rich, in-depth knowledge to be attained instead of numerical generalization.

The study population included secondary school teachers who were already serving in both the government and the private schools in District Swat, Khyber Pakhtunkhwa. These educators teach students on the ninth and tenth grades and should implement digital technologies on the same basis as modern educational requirements. The sample was identified using the purposive sampling method, which enabled the researcher to target participants with different degrees of exposure to the digital teaching tools and who were ready to testify on their experience. Fifteen teachers were selected to take part in the study, thus they were diverse in gender, years of teaching

experience, subject speciality and geographical location in the district. This is said to be a good sample size in qualitative research and there is no need to be interested in statistical representation, but in gaining depth of understanding.

The most significant approach of data collection in this study was semi-structured interviews. This plan enabled the participants to give their opinions freely and at the same time it helped in keeping the discussion within the major areas that need to be discussed like, digital competency, access to technological infrastructure, professional training and introduction of digital tools in the classroom teaching. A guide on the interview was designed to achieve uniformity in the interviews, though there is a space to expand on the story and free flow of discussion. The interviews that lasted thirty to forty-five minutes were held where it is convenient to the respondent. Informed consent was taken and the interviews were taped and subsequently transcribed word-to-word to be analyzed.

The thematic analysis was employed in the analysis of the data which involved thorough reading of the transcripts, contents coded and patterns and themes that pertained to the aims of the research were identified. This approach allowed the researcher to point out differences and similarities in responses of the participants. Manual coding was chosen in order to facilitate tight interaction with the data and to address the natural preservation of the voice of the participants. The ethical aspects of the research such as informed consent, voluntary nature, confidentiality and privacy and right to withdraw at any time was taken into cognizance and enforced by the researcher.

This theoretical style allowed an anchored and situated interpretation of the perception, experience, and negotiation of the digital pedagogy by teachers working in secondary schools in District Swat. It also showed the interaction of structural constraints and personal agency in the formation of the readiness of teachers in an extremely digitalizing educational environment.

Results

Teachers in secondary schools in the District Swat provided a multi-faceted image of the perception,

experience and practice of digital pedagogy in their classrooms. Their reflections did not only show practical barriers, and even personal, psychological, and institutional intricacies, which is what determines their preparedness. Virtually all participants mentioned that the digital transition was considered not only unavoidable but also overbearing, at least when there was no proper training or stable infrastructure to support it.

A few teachers pointed out that in some schools there exist computers and internet connectivity; however, there are chances that the facility in these schools is outdated, mismanaged, or stuck towards the use of administration. Most rural schools still lack internet connections due to which they are working in a so-called digital vacuum, as one of the participants described it. The technological gap involved not just hardware, but also the lack of significant opportunities to learn more about using digital tools in pedagogically responsible practices. The majority of the respondents reported that they had never been trained about training with technology in the classroom in particular; they might have been to short workshops, at the most with a subsequent follow-up.

Nevertheless, regardless of these problems, the research brought out some instances of innovation and behavioral flexibility in teachers. Other instructors said that they made informal online communities with wireless devices, such as cell phones, or instructed students to provide academic resources in WhatsApp groups in order to keep apprentices active, especially during school lockdowns. Such efforts were a training of silent strength the world has never heard about: teachers going out of their job descriptions to cover a digital divide which they were not trained to traverse.

One trend that stood out was the emotional cost of teachers to such digital changes. Some of them

said that they were scared or stressed, hopeful or reluctant to start teaching digitally because of embarrassment or error. Some of them even doubted that digital pedagogy could be applicable to their cohort of students, taking into account the local culture and infrastructural realities. Nevertheless, in schools where the principals engaged in the process of promoting and facilitating digital innovation, teachers felt more confident and motivated. In order to reveal how themes have radiated among the participants, the following table demonstrates how each of the major issues was brought up in interviews:

Theme	Frequency (out of 15)
Lack of Infrastructure	13
No Formal Training	12
Personal Adaptation Efforts	10
Emotional/Motivational Barriers	9
Supportive School Leadership	8

These trends indicate a major contradiction of the present of the digital education in Swat: the modernization aspiration and implementation vs. the actual lives of the people who are supposed to continue this agenda into the future. The story that came out of these results was neither a tale of failure or of resistance but of fractured preparedness one in which determination and challenge co-exist in equal amounts.

Proportional Representation of Themes from Interview Data



Discussions

The results of this survey point to the multiple and dramatic character of teachers' readiness to digital pedagogy in the secondary schools of District Swat. In spite of national policy to digitalize the education system, local conditions prove that all infrastructural issues, absence of formal training, psychological objections, and institutional assistance are essential in the development of digital readiness in teachers (Wajid et.al, 2025). Indeed, the paper finds out that preparedness does not just exist as an access to technology, but it is also influenced by confidence and the attitude of a teacher, the institutional environment and exposure of a professional to training. One of the most frequently discussed barriers was the extensive lack of digital infrastructure, particularly in rural and underserved regions. This is as a similar possibility has been indicated in past studies that offer limited use of digital tools in the developing world due to resource abundance (Nipo et.al, 2024). Nevertheless, a truly significant, but largely underrepresented finding of the present research concerns the emotional and motivational preparedness of educators. Numerous colleagues revealed their fears and worries about digital teaching, which presents evidence of psychosocial support and confidence-building activity as a component of any digital transformation agenda. Interestingly, in spite of the systemic gaps, more teachers are on their own proactive adoption of innovative strategies with the use of their devices or on free digital tools. This indicates that there is a very strong undertone of flexibility and commitment towards the

profession. What they do is a kind of resilience that can be used to one or another advantage with the help of respectful leadership and training system which will be properly organized. In schools where the leadership acted as an enabling agent, the teachers exhibited good interaction with digital practices, which proves that the administrative vision and support is a key driver of any change.

Practical Implications

The results of the study have significant practical value to the stakeholders of education interested in improving digital pedagogy in the secondary school system, especially in the regions such as District Swat. Among the most obvious needs, it is possible to note the creation of local, context-specific training programs. ICT literacy alone is not enough to make teachers understand how they can properly implement digital tools into subject-specific learning. This requires training that would be experiential, hands on and practical as regards the demands of the rural classroom. Moreover, the referenced research points out the monumental importance of infrastructure as the accelerator or a hobbling force behind digital teaching. Both the provincial education departments and local administrations should invest in stable internet connectivity, reliable electricity and up-to-date digital devices. Unless these basic gaps are filled, the initiatives to adopt the digital pedagogy will be shallow.

The other important implication is the role of leadership in school. The teachers who indicated

their positive experiences of using digital tools reported in contexts with the principal or headteacher who promoted innovation actively. This implies that the motivation and digital engagement of the other members of the teaching staff may be affected as a result of the leadership development program provided to empowered school leaders. Lastly, the researchers indicate the importance of appreciating teachers as agents of change and utilizing them in digital transition. Most participants showed their own initiative and resilience and engaged students, through their own devices or informal networks. Such demonstrations, although they have been ignored in many contexts, emphasize the need to develop the culture of teacher autonomy, collaboration and innovation in the system of education.

Limitations and Future work

Although the study provides us with quite wise ideas, there are some drawbacks that have to be mentioned. The size of sampling was restricted to 15 teachers in District Swat and it may not cover the diversity of experiences throughout the state or country due to its appropriate level of a qualitative depth. In addition to this, opinions of teacher participants only were studied, there were no participation of school leaders, students, or their parents whose perceptions could be used to enhance the picture of digital preparedness. Future researches can also think of broadening geographic coverage to cover other districts in the Khyber Pakhtunkhwa so as to have a larger scope of the comparative analysis. The mixed-methods research would be also useful to triangulate the qualitative findings with numbers of infrastructure levels, student performance or teacher performance. Follow-ups on longitudinal adoptions of the digital preparedness, such as the investigations of digital preparedness progress in relation to the policy changes or professional development work, would provide more insights and guidelines to plan in the long-term situation.

Conclusion

This paper has examined the readiness of secondary school teachers in District Swat to receive digital pedagogy, and the picture has been revealed amid limitations and strength. Educators

are working in a changing learning landscape with very little institutional support, and a lot of individual effort. Although there still exists issues linked to readiness through infrastructure, training and emotional awareness, there is an inclination to expand and evolve through the use of innovative means of coping and acts of digital practice managed by teachers. The research concludes that the digital pedagogy in these contexts cannot be enhanced only by delivering the devices; it would need thoroughly integrated, teacher-centered strategy based on the development of the infrastructure, professional training, administrative services and policy coordination. When stakeholders listen to the voices of teachers and realize their individual issues and the strengths, they could develop more effective and inclusive strategies to reduce the digital divide and bring the meaningful use of technology in education in Pakistan.

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