

## An Analysis Of The Effectiveness Of Blended Learning On Pedagogical Skills Of Elementary School Teachers Of Khyber Pakhtunkhwa

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Article Info	Abstract
<p><b>Article History</b></p> <p>Received: February 02,2026</p> <p>Accepted: May 03,2026</p> <hr/> <p><b>Keywords :</b> Blended Learning, Technology, Professional Development (PD), Skills Training, Induction</p> <p><b>DOI:</b> 10.5281/zenodo.20007704</p>	<p><i>The whole mechanism of teaching and learning has been changed by the innovations of the 21<sup>st</sup> century significantly, which in turn redefined the effective teaching and learning. One of the key objectives of the study was to find out the positive effects of blended learning on pedagogical skills of in- service elementary school teachers in Khyber Pakhtunkhwa therefore, deductive approach of research was adopted. A questionnaire was designed by the researcher and data was collected from the sample respondents. Total number of three hundred and sixty nine 369 elementary school teachers of districts Mardan and Malakand were selected as they were trained through blended learning in the first phase of the Induction Program offered by the (PITE) and (RITE), now known as Directorate of Professional Development (DPD) and Regional Professional Development Centers (RPDC's) respectively. Data analysis was carried out through frequency distribution and simple percentage. Findings of the data analysis showed that blended learning is a step towards professional development of elementary school teachers. The results showed that blended learning is effective with reference to teaching and learning process. It plays a vital role in the improvement of skills such as language, command on subject, technological skills and the development of multiple professional skills. Moreover, the problems related to the utilization of technology along with problems related to digital literacy, encountered by teachers during training through blended learning. It was recommended that that a short term workshop should be arranged before starting a blended learning training program at elementary level.</i></p>

### Introduction

As being an important tool for human development, education, plays the role of backbone of the system of the world. Many studies are carried out respectively in order to realize the ways to improve the teaching and learning process. One of the most acceptable and highly adopted methods used in education is the amalgamation of technology on regular schooling, known as blended learning or hybrid or mixed method (Minaz, Tabassum & Idris 2017).

Technological amalgamation into various fields of life has changed the way of doing things especially in education. The trend of the use of technology in education is taking place very rapidly everywhere on the globe. Blended learning is the most widely used and modern practice in teaching and learning process. Besides its practice in formal schooling, it is also being used for the training purpose in abundant fields like medical engineering and agriculture (Minaz, 2018).

The definition of Blended Learning varies from person to person as Clark & Myer (2003), stated that blended learning has no exact definition. Blended learning defined by Singh & Reed (2001) as a procedure that employ multiple methods of Singh & Reed (2001), viewed blended learning as a program of learning that uses multiple approaches of deliverance to achieve learning objective more rapidly. According to Driscoll (2002), combining blended learning is combining several mediums of instructional technology like training on internet, online network materials, competent educational stuff, along with conventional type of teaching that is led by class or subject teacher.

Many learning organizations are using blended learning program to fast-track present attractive progression of teaching and learning. In blended learning program teachers as well as student were facilitated with flexibility. According to the views of Allen & Seaman (2006) blended learning is adopted as a factor of modernization of educational institutions. Kulpa (2015) carried a mixed method study to analyze the effect of professional development (PD) in relation to blended learning program. The study collected data by administering an online observation, internet based survey, interviews, and, face to face interviews. Results found a great appreciation as well as a feeling of improbability regarding the method.

Asif, Ali & Shehzad (2019), studied perceptions of teachers and their students regarding the new method namely blended learning which was employed in the class of physics in a secondary school of district Swabi. Data was collected from 4 teachers and 120 students. Each 40 students were taught by each teacher. At the end of the experiment questionnaires were distributed and interviews were conducted to know perception of teachers and students regarding the blended course of study. Quantitative data was analyzed by through mean and standard deviation (SD) which marked the results as true by comparing to the data recorded from interviews. The experiment found some minor issues related to technological aspect of blended learning but the overall perception of teachers and their students about the new method were found positive.

Hashemi & Kew (2020), studied blended learning in relation to its effects on teaching as well as learning of English. For the purpose of understanding blended learning effects, various relevant literatures was reviewed in the areas of reading skills, writing skills, listening and speaking skills. The study recommended the use of blended learning in the teaching of English as it is beneficial for both teacher and student. It fastens the learning process positively as well as polishes pedagogical skills of the teachers.

According to Alsalmi, Eltahir & AlQatawneh (2019), effectiveness of blended learning lies in the fact that it avails opportunity to the teachers to address the needs of the students more efficiently, it makes the best use of time in classroom, students take interest in learning and teacher is allowed to teach in a more innovative way.

In spite of the effectiveness of Blended learning it is dire need of the days that it become a useful part of teacher trainings to polish pedagogical skills. Trainings are the building blocks of teaching. Trainings, either before service or post appointment have a huge significance. Trainings and professional development workshops add to the treasures of information and skills. Likewise the expert and knowledgeable instructors and impart useful education which contribute to the formation of a good society with capable and universal solvers. Teaching, nowadays, is not just teaching to students from the 1<sup>st</sup> page of the text book to the last page, home works and exams but it has become a complex term to define. Training of teacher has a vital importance as the teacher develop and sharpens the skills as well as widens his understanding. Different countries train school, college and university teachers for different duration to outclass their competence in professional development. Countries like Europe provide three years training facility to the teachers of the European countries. Other countries like France, Spain and Germany train their teachers for five years (Kavak & Baskan, 2009). According to Kane and Francis, (2013) Canadian NTIP (New Teacher Induction Policy) has amalgamated conception of training; pre and in-service training, providing and utilizing both training modules.

The government of Khyber Pakhtunkhwa has introduced and implemented the new Teacher Induction Policy, 2017 to enhance the pedagogical skills of the teachers. This new policy eliminated the pre-service training and replaced them by Induction Program, nine months in-service training through blended learning.

### **Objectives**

1. To find out the positive effects of blended learning on pedagogical skills of in-service elementary school teachers in Khyber Pakhtunkhwa
2. To find out the challenges faced by elementary school teachers during training through blended learning

### **Research Questions**

1. What are the positive effects of blended learning on pedagogical skills of in service elementary school teachers of Khyber Pakhtunkhwa?
2. What are the challenges faced by elementary school teachers during training through blended learning?

### **Statement Of The Problem**

The new Teacher Induction Policy of 2017 opposed the existing policy for teachers in which professional education was mandatory for joining teaching. Bachelor degree of 14 years education was marked the only requirement to apply for teaching jobs through this new policy. Despite that previously existed policies emphasized on facilitating effective teacher education, it replaced professional education (Halai, Begum, Niaz, Hussain & Baig, 2018) nine months long training through blended learning. In other words this new policy is the application of modern technology in training of teachers to achieve its objectives more efficiently. The whole purpose of the policy was to professionally growth of the pedagogical skills of the teachers. As this was the first time of the implementation of advanced technology in teacher education in Khyber Pakhtunkhwa province of Pakistan, many school teachers faced several problems. Therefore the present study was conducted to find out the positive effects of blended learning in the area of pedagogical skills of elementary school teachers along with challenges that teachers confronted during the training sessions implanted in blended learning.

## Literature Review

A large amount of literature is available highlighting various aspects of blended learning. Some researchers found blended learning as a useful method in teaching and learning while others highlighted the flaws and problems carried by blended learning. For instance,

Garrison & Kanuka (2004) noticed an increase in the rate of course completion and retention as well as increased student satisfaction. Kenney & Newcombe (2011) conducted a comparative study to conclude the strength of blended learning with reference to performance. The study concluded blended learning method as an effective tool for the achievement of higher grades from the students that learned in common classroom teaching. Smith (2010) pointed out that educational setups and groups of learners witnessed huge improvements with implementation of blended learning. It also optimized application of improved school resources.

Tshabalala, Ndereya & Merwe (2014) carried out a study to explore the point of view of teachers on blended learning. They highlighted diverse shortcomings associated with the method of blended learning. Identified problems and challenges by the study included no knowledge about the use of technology, educational policies with poor objectives, no autonomy and not enough contact to use technological devices for educational purpose. Findings revealed respondents were of the view that teaching through blended learning method provide flexibility to the process of teaching and learning. It promotes autonomy in learning by providing online platform of learning.

### Benefits of Blended Learning

Students learn more effectively and rapidly through blended learning module as compare to unadventurous classroom settings Garnham & Kaleta (2002). Horn & Freeland-Fisher (2017) highlighted the benefits of blended learning includes real time data collection with a vast time of individual students' instructions. A conscious implementation of blended learning is recommended by the study. Garrison & Kanuka (2004) argued that blended learning is an effective tool as it challenges the old traditional lecture based model of teaching as well as it presents the materials more actively and with beneficial activities. Introduction of blended learning in high classes provides a high retention rate and improves the academic performance of students' academic. (Boyle, Bradley, Chalk, Jones & Pickard, 2003)

Stockwell et al. (2015) advocated model of blended learning as it changes pedagogical style from common teaching to another level therefore can easily achieve objective in teaching science subjects. Birbal, Ramdass & Harripaul (2018) carried out a survey to examine teachers and students attitudes regarding various dimensions of blended learning method. The survey collected and analyzed responses obtained 807 students and teachers. The findings of the survey showed features of flexibility and aspect of technological use was highly appreciated by teachers. The findings of the survey also revealed a positive correlation internet-based learning and communication.

Garrison & Kanuka (2004) studied the transformative prospective of blended learning in higher education, and winded up that the potential of blended learning enhances the competence and effectiveness of learning. Another study was carried out by AlKhaleel (2019) for the purpose to highlight the advantages of blended learning method to teach English as a foreign language. Data was collected from 60 students associated to medical faculty at the University of Tabuk in Saudi Arabia. Data collection was done through questionnaire containing four portions. Findings from SPSS analysis of data showed blended learning as an important tool for teaching English as a foreign language. Student population of 84 percent regarded blended learning as tool for improvement of skills related to language learning.

A survey was carried out by Shand & Farrelly (2018) to know the benefits as well as the challenges related to teacher education before service through blended learning. Survey collected data at the end of the program of social studies training with the use of pedagogical methods. In the study teachers acknowledged the benefits along with the challenges faced by them throughout the training delivered in the course of blended learning. After data analysis flexibility in teaching and learning, group assignment completion, swiftness, contact and opinion sharing were identified as the benefits of blended learning.

Tshabalala, Ndereya & Merwe (2014) carried out a study to find out the views of teachers regarding the method of blended learning and recognized various problems linked to blended learning. According to the study the benefits of blended learning included flexibility in the process of teaching and learning. Besides flexibility in teaching and learning, autonomous learning, internet based knowledge familiarity and expediency.

Another survey was carried by Choudhary, TJDH & Noor (2021) to highlight the impact of teacher induction training on the understanding and pedagogical skills of chemistry teachers. Number of thirty (30) teachers participated in the survey. Teachers were placed into two groups; one with computer tablets having personalized contents while the second group was taught conventionally. Analysis of the data revealed a huge gap between the two groups. The group of teachers with tablet excelled in understanding and with a vast improvement in pedagogical skills compared to the other group. The study concluded that blended learning improves the understanding and pedagogical skills of the teachers.

A quasi-experimental study was carried out by Yustina, Syafii & Vebrianto (2020) for the purpose to inspect the impact of blended learning as well as task base method on creativity of teachers. Total number of

seventy six 76 teachers participated in the study. Two groups of teachers were made namely control and experimental group. Traditional pedagogical method was employed to control group, on the other hand blended learning as well as task base learning pedagogical method was implemented to experimental group. Results of pre-test and post test indicates that blended learning and task base learning has positively improved creativity of teachers and an improvement in their pedagogical skills.

Owston, Sinclair, & Wideman, (2008) studied the effect of blended learning program on the attitude of teachers toward the new program as well as how blended learning improves pedagogical skill of the teachers. The study inspected two programs of twelve months (one academic year) duration for professional growth in the subjects of science and mathematics. The programs were designed for elementary school teachers through blended learning. Data was collected from sixty eight teacher of the subject of mathematics and the number of sixty five elementary school teachers from the subject of science. The results of data analysis showed that blended learning has positively affected the attitude of teachers along with the improvement of understanding of the contents and also has motivated many elementary school teachers to change their pedagogical methods by replacing with required pedagogical methods.

Blended learning efficiency in the area of pedagogical skills improvement through a quasi-experimental study was determined by Isman, Abanmy, Hussein & Saadany (2012). Number of seventy one students of teaching college participated in the experiment. Observation cards were used for pedagogical skills. According to the results of pre and post tests, the students of the teaching college voted in favour of blended learning which played a superior role in the improvement of pedagogical skills.

Albhnsawy & Aliweh (2016) also studied the impact of blended learning program on the pedagogical expertise in the domain of microteaching course at undergraduate level. This blended course continued for sixty three 63 days. After conclusion of the course, learning teachers' performance in microteaching was assessed by administering pre test and posttest. Results of the analysis concluded that blended learning positively contributed to the enhancement of pedagogical skills of the undergraduates.

Senturk (2021) examined approach of blended learning from pre service school teachers. The study used a semi experimental approach to know the achievement of 21<sup>st</sup> century skills of the teachers before service. A course of ten (10) weeks of the implementation of the blended learning in the training of pedagogical skills was designed. "Multidimensional 21<sup>st</sup> Century Skills Scale" was used as data collection tool. Analysis of the data unveiled that there is a large gap between the achievement of the control and the experimental group. It showed that due to blended learning approach the pedagogical skills of pre service school teachers were boost up.

### **Challenges during Blended Learning**

Besides all of the advantages and benefits of blended learning there were some challenges faced during the implementation in actual classroom situations therefore Kosar (2016) carried out a study to explore ELTs' (English language teachers) perceptions concerning Blended Learning. The study concluded notwithstanding various challenges, encountered by EFL instructors, they have positive perceptions regarding Blended Learning.

Shand & Farrelly (2018) find out in their research study that self-regulation and time management were recognized as problems related to blended learning. Likewise a systematic literature review study was carried out by Rasheed, Amirrudin & Aniza (2020) to highlight the challenges related to the portion of online learning from the perspective of learners, teachers and educational institutions. The result of the systematic literature review challenges related to self-regulation and the use of technology for learning purposes as the leading challenges encountered by students. Also the teachers faced problem to apply technology in teaching process. The challenges of providing suitable instructional technology and training through technology were the major ones. Tshabalala, Ndereya & Merwe (2014) also highlighted various challenges entailed with the method of blended learning. Results showed that the problems recognized include problem during the implementation of blended learning program and having no previous knowledge of the blended learning approach. According to respondents it is a difficult task to implement blended learning in real classroom situations due to poor educational policies, a lack of technological knowledge and having no routine of independent learning.

### **Materials and Methods**

Population of the study was districts Mardan and Malakand. Selection of those districts was convenient for the researcher and these districts also represent plain and mountainous areas. The units of analysis in the study were in-service school teachers trained through blended learning during induction program of Khyber Pakhtunkhwa. A self-developed questionnaire was administered to a total of 369 teachers to collect data. Table no.1 shows the number of respondents of the study

District	Male	Female
Mardan	160	95
Malakand	115	72
Total	275	167

Grand Total

275 + 167 = 369

The questionnaire was comprised of statements in the area of pedagogical skills; language, contents, technology, flexibility, development of Professional skills, technique of assessment, challenges concerning technology and its level of understandings. Once the data was collected, it was analyzed by uploading Excel sheet for the analysis of frequency distribution and simple percentage

### Data Analysis and Interpretation

Questionnaire of five point Likert scales was used comprised of eight categories that were Improvement of language skills, Improvement of subject command, Improvement of technological skills, Greater flexibility in teaching and learning, Improvement of professional development, fast and accurate way of assessment, technological problems and problems related to digital literacy. Furthermore, each category was contained statements related to their category.

**Table No 1. Effects on Pedagogical Skills**

Category	SA (%)	A (%)	DA (%)	SDA (%)	UN (%)
Improvement of Language Skills	50.47	32.89	8.11	7.01	1.52
Improvement of Subject Command	37.4	42.21	3.79	14.70	1.90
Improvement of Technological Skills	31.16	30.89	17.55	16.47	3.93
Greater Flexibility in Teaching and Learning	57.79	28.99	9.28	2.86	1.08
Improvement in Professional Skills	39.84	40.92	6.50	10.3	2.44
Fast and Accurate way of Assessment	36.31	43.36	12.74	5.69	1.90

### Results and Discussion

**Improvement of Language Skills:** The results shows that 50.47 % of the respondents opted for strongly agree, 32.89 % for Agree, 8.11 % for disagree, 7.01 for strongly disagree and 1.52 for undecided. The percentage shows that maximum teachers believed that blended learning is effective for improvement of language skills; reading, writing, speaking, listening and grammar skills. It is useful in the improvement of basic skills of language.

**Improvement of Subject Command:** The results indicates that 37.4 % of the teachers strongly agree to the item, 42.21 % agree, 3.79 % disagree, 14.70 % strongly disagree and 1.90 % undecided. The percentage of the responses indicates that blended learning is effective in improvement of subject command. Trainee teachers were confident of having good command on different subjects.

**Improvement of Technological Skills:** The results indicates that 31.16 % of the teachers strongly agree to the item, 30.89 % agree, 17.55 % disagree, 16.47 % strongly disagree and 3.93 % undecided. The percentage shows that teachers agree that blended learning is effective to improve technological skills. Teachers with low or no knowledge of technology learned various things about the use of technology.

**Greater Flexibility in Teaching and Learning:** The results indicates that 57.79 % of the teachers strongly agree to the item, 28.99 % agree, 9.28 % disagree, 2.86% strongly disagree and 1.08 % undecided. Responses show that providing flexibility is an effective aspect of blended learning. It allowed the trainee teachers to learn according to their own timetable.

**Improvement in Professional Skills:** The result indicates that 39.84 % of the teachers strongly agree to the item, 40.92 % agree, 6.50 % disagree, 10.3 % strongly disagree and 2.44 % undecided. In the light of the responses it can be concluded that blended learning is effective in improvement of professional skills. It polished the pedagogical skills of trainee teachers.

**Fast and Accurate way of Assessment:** The result indicates that 36.31 % of the teachers strongly agree to the item, 43.36 % agree, 12.74% disagree, 5.69% strongly disagree and 1.90 % undecided. Result reveals that blended learning is a fast and accurate way for assessment. Assessment and grading through blended learning yields impartial and on the spot results.

**Table no 2. Challenges Faced By Elementary Teachers during Blended Learning**

Category	SA (%)	A (%)	DA (%)	SDA (%)	UN (%)
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Problems Related to Technology	11.38	19.78	17.61	48.78	2.44
Problems Related to level of Digital Difficulties	27.10	33.60	20.87	15.45	2.98

**Problems Related to Technology:** The result indicates that 11.38% of the teachers strongly agree to the item, 19.78 % agree, 17.61 % disagree, and 48.78 % strongly disagree and 2.44 % undecided. Result shows that majority of the teachers disagree for facing problems related to technology however 37.39 % of teachers faced problem. As this was the first time to use technology in teacher education in Khyber Pakhtunkhwa so some teachers faced problem with tablets.

**Problems Related to Digital Difficulties:** The result indicates that 27.10% of the teachers strongly agree to the item, 33.60 % agree, 20.87% disagree, 15.45% strongly disagree and 2.98 % undecided. Result shows that more than 60 % of teachers faced problems related to digital literacy. They didn't know the use of technology.

### Conclusions

The Overall result shows that blended learning has optimistic effect on the pedagogical skills of elementary school teachers of Khyber Pakhtunkhwa Province of Pakistan. Which shows the effectiveness of blended learning in the field of training and professional development. Blended learning is an effective way towards the improvement of language skills, subject command, technological and professional skills of elementary school teachers of Khyber Pakhtunkhwa. It is also provide greater flexibility to teacher and student and is a best tool for effective assessment. Therefore it is concluded in the light of above findings that elementary school teachers improved manifold pedagogical skills through blended learning. The teachers considered blended learning as an effective process for professional development. A high percentage of the respondents showed the positive effect of blended learning in refining multiple pedagogical skills such as language, command on subject, technological and development of professional skills. As it was the first time that teachers were trained through blended learning that's why many teachers faced problems during the implementation of blended learning. Therefore result these problems were mentioned by the elementary school teachers. The problems were related to technology and digital literacy, which were to some extent stalled during the process of training. In spite of the fact that blended learning were effective in professional development but it was also fact that there were some problems highlighted by the respondents. These problems were such as slow internet connection, no access to internet or tablet operating problem. Many teachers also faced problems as they didn't know how to use technology. Technology, being a new thing which converted the cause of problem the elementary school teachers faced.

### Recommendations

It is recommended on the bases of present research that responsible stockholders like DCTE (Director Curriculum and Teacher Education) and PITE (Provincial Institute of Teacher Education) now (Directorate of Professional Development, DPD), RITE (Regional Institute of Teacher Education) now known as Regional Professional Development Center (RPDC's) should continue and take more effective steps to implement Blended learning in the field of Teacher Education. Data results showed that several elementary school teachers threatened challenges as they have less knowledge of the practice of modern technology therefore it is recommended on the light of mentioned problem that a short term workshop should be arranged for the participants before starting a blended learning training at elementary level.

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