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Research Article

Effect of Blended Learning on the Academic Performance of Secondary School Urdu Language Learners

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Abstract

In today's digital age, where communication technologies evolve at a rapid pace, learners are increasingly drawn to mobile devices and AI-powered tools that make education more interactive and engaging. Responding to this shift, educators are merging traditional classroom methods with digital innovations, giving rise to blended learning, face-to-face teaching, and online instruction. This study explored the impact of blended learning on ninth-grade Urdu language learners, using a true experimental pre-test–post-test design. Lessons were delivered over 30 days for the control and experimental groups. The Experimental group was taught using a carefully designed blended approach, while the control group followed conventional teaching methods. Post-intervention analysis revealed that blended learning significantly enhanced students' academic performance. The medium of instruction, parental education, and income influenced the outcomes, although gender showed no significant effect. The findings affirm the promise of blended learning in Urdu language education and advocate for continued research across diverse demographic and instructional contexts.

Keywords

Blended learning approach. Urdu Language, Artificial Intelligence, and Academic Achievement

1. Introduction

As the global population surges each day, India stands on the brink of becoming the most populous nation in the world (Kumar et al., 2025). Parallel to this demographic tide is an equally powerful wave, the explosion of knowledge, which has redefined human life and placed immense pressure on educational systems. These twin challenges of population growth and information overload have sparked urgent questions about the adequacy of our education in both quality and quantity. However, with the rise of educational technology, hope glimmers. The rapid advancement of information and communication technologies is reshaping how we teach and learn, expanding access and elevating pedagogy. No longer should our instructional methods be dictated solely by subjects; instead, they must pivot toward the learner—nurturing curiosity, promoting discovery, and encouraging creative thinking. Every learner possesses unique potential, and education should cultivate thinkers, innovators, and problem-solvers. In this fourth industrial revolution—marked by AI,

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IoT, VR, AR, blockchain, and intelligent systems—teaching must be dynamic, diversified, and deeply human.

The National Education Policy (NEP) 2020 of India charts a visionary path toward a multidisciplinary and holistic model of education, placing technology at its heart. Embracing the digital revolution, the policy emphasizes the seamless integration of online learning tools with traditional pedagogies—recognizing that in an era defined by artificial intelligence, such a blend is not optional but essential. AI stands as a transformative force in education, introducing intelligent tutoring systems, adaptive learning platforms, and interactive environments that personalize learning experiences. Its applications span expert systems, speech recognition, natural language processing, and computer vision, all converging to create smarter, more intuitive educational ecosystems. As machines learn to teach, the role of educators evolves from information providers to facilitators, mentors, and designers of enriched learning experiences. While stakeholders celebrate the promise of AI to enhance both access and quality (Seo et al., 2021, 8), ethical questions around privacy, autonomy, and human connection must also shape its thoughtful adoption in education.

Rapid technological advancement has reshaped the educational landscape, gradually replacing rigid traditional classrooms with more flexible, technology-infused environments where teachers and students coexist in both physical and virtual spaces (Schaber et al., 2010,12; Nortvig et al., 2018, 47). As traditional and online modalities evolve, a third model, blended learning, has emerged, fusing the strengths of both approaches into a dynamic, learner-entered pedagogy (Haijian et al., 2011, 70-71). Originally rooted in corporate training (Sharma & Barrett, 2008) and later adopted in higher and language education (MacDonald, 2006; Tomlinson & Whittaker, 2013). Blended learning blends face-to-face instruction with digital tools, drawing on various educational theories and instructional designs. It offers flexibility, personalization, and engagement through models like flipped classrooms, lab rotations, and station rotations. Despite lacking a standardised format, its efficacy lies in its adaptability, enhancing student participation, reducing boredom, and encouraging creativity (Miskiah et al., 2020). It supports self-regulated learning (Shen & Liu, 2011), interaction (Keshta & Harb, 2013), and collaborative engagement, addressing Bloom's higher-order cognitive skills and aligning with global goals like SDG 4 for inclusive, lifelong learning (Trustworthy AI in Education, 2020). As a pedagogical strategy, blended learning not only improves access and quality but also redefines classroom time, making both online and offline modes mutually reinforcing (Garrison & Vaughan, 2008; Dziuban et al., 2018).

2. Literature Review

In recent years, educational research has increasingly highlighted the transformative potential of blended learning in enhancing student performance and engagement. Studies show that students taught through Active Discovery and Participation through Technology (ADAPT) exhibit the highest gains compared to those without such instruction (Tuckman, 2002), and hybrid course models improve the learning experience through timely feedback (Olson, 2003). Robinson (2019) emphasized that institutional support bolsters the effectiveness of blended learning, while Rovai and Jordan (2004) observed stronger community bonds within blended courses. Despite the millennial generation's comparatively neutral reception (Dziuban et al., 2005), blended learning has been linked to increased motivation (Hughes, 2007), critical thinking, and improved academic outcomes across gender lines (Korkmaz & Karakuş, 2009; Tayebinik & Puteh, 2012; Kazu & Demirkol, 2014). It can reshape learner engagement (Jee & O'Connor, 2014), boost achievement in social studies (Saritepeci & Çakir, 2015), and while some suggest it may not significantly impact vocabulary teaching (Tosun, 2015; Al Bataineh et al., 2019), others report improved speaking, grammar, and language proficiency (Ginaya et al., 2017; Isti'anah, 2017; Wichadee, 2017). Blended learning facilitates language acquisition (Malissa, 2018), science achievement (Krishnan, 2011; 2015), and overall academic performance (Bader et al., 2019), enhancing 21st-century skills like creativity (Miskiah et al., 2020). It promotes a productive learning environment, language development (Albiladi & Alshareef, 2019), critical thinking, and social collaboration (Kavitha & Jaisingh, 2018; Gupta, 2020), while offering flexibility and accessibility (Alekya & Ramani, 2019). According to Nachimuthu (2020), it effectively raises achievement levels. Learners remain motivated (Sabah, 2020; Zainon & Yamat, 2021), with enhanced writing, engagement, autonomy, and interaction (Jiang et al., 2021; Kalmamatova et al., 2022). Regardless of gender, region, or background, students show a favorable attitude toward blended learning (Jayaraman et al., 2022), though recent studies recognize gender-related differences in achievement (Egara & Mosimege, 2024; Naz et al., 2024). Blended environments significantly improve outcomes, provided students demonstrate self-regulation—a vital aspect of motivation and academic success (Isti'anah, 2017; Luo & Zhou, 2024; Shurygin et al., 2024). Ultimately, blended learners consistently outperform peers in traditional settings (Kumar Mandal & Chandra Bhat, 2024; Nayak et al., 2024), validating the model's effectiveness in contemporary education.

Urdu, historically been recognized as a lingua franca among Muslim rulers in India. It evolved from New Indo-Aryan linguistic roots, particularly influenced by Khari Boli. It symbolizes a confluence of Islamic and Indian cultural

elements, reflecting the rich pluralism of India's multilingual society. Once the medium of communication for both Muslim and Hindu elites, Urdu continues to hold significant linguistic prominence, with approximately 87.6 million speakers globally, ranking as the 11th most spoken language worldwide and the 7th most widely spoken in India. Despite its cultural and linguistic significance, limited research has examined innovative pedagogical approaches in Urdu instruction, particularly within the Indian context. The present study seeks to bridge this gap by investigating the Effect of Blended Learning on the Academic Performance of Secondary School Urdu Language learners. By tailoring instruction to accommodate diverse learning styles and fostering meaningful interaction. This study aspires to enhance content knowledge and learner engagement. Conducted in government schools across Bihar, the research offers pioneering insights into the application of blended learning in Urdu language education, contributing substantially to the academic discourse in this field. Accordingly, the following sections have been developed to guide the investigation.

3. Methods

Blended learning significantly boosts academic achievement. For the Urdu subject, this approach is particularly effective, as it utilizes digital resources to enhance language learning. By providing new ways to practice grammar and conversation, blended learning helps overcome the limitations of traditional methods. The impact of this approach on Urdu students in government schools can vary. Demographic factors, such as socioeconomic status, access to technology, and parental support, play a crucial role. For blended learning to succeed, schools must address these disparities, ensuring all students have equal access to the necessary resources.

This study will explore how blended learning can transform academic achievement for Urdu students in government secondary schools. The study investigates its direct influence on Urdu language performance, from reading to conversational fluency. A key focus is to understand how factors like gender, socioeconomic background, and technology access affect these outcomes. Ultimately, this research aims to show how blended learning can be implemented equitably to benefit all students.

This study operates on a series of null hypotheses to test the true impact of blended learning. It is assumed that blended learning will not significantly improve student academic outcomes in Urdu when compared to traditional face-to-face instruction. It is hypothesised that before the intervention, both the experimental and control groups will have no significant difference in their Urdu scores, also there will be no significant difference in post-test scores between the two groups. It is anticipated that demographic factors such as gender, parental education, and occupation will not significantly influence students' Urdu performance.

To explore the impact of blended learning on Urdu language learners' academic performance, a true experimental design with randomized equivalent groups and pre-test–post-test measures was adopted. An initial Urdu proficiency test was conducted on 237 ninth-grade students to balance the control and experimental groups. Using proportional stratified sampling (Gay et al., 2012; Creswell, 2012), 160 students were selected from four government secondary schools, two Urdu-medium and two Hindi-medium, in Purnia, Bihar. A 30-day instructional plan was implemented, with the control group receiving traditional face-to-face teaching and the experimental group engaging in blended learning using tools like Wordwall, Quizizz, Padlet, and Blendspace. Data collected through pre- and post-tests were analyzed using SPSS 26, employing t-tests and p-values to evaluate the effectiveness of the intervention and provide evidence-based insights into the role of blended learning in Urdu language education.

Table 1: ***Demo graphic information***

Demographic details		**Frequency**	**%**
Gender	Male	80	50
	Female	80	50
Medium of study	Urdu	80	50
	Hindi	80	50
Parental education	Graduates	42	26.25
	Below graduates	118	73.75
Parental occupation	Salaried	38	23.75
	No salaried	122	76.25

4. Discussion and Findings

Table 2 ***Analysis of the treatment (pretest and post-test)***

Rows	Groups	Treatment /Variables	Mean	N	S. D.	SE_M	Df	t-value	Critical value	Decision
01	Control	Pretest	21.52	80	6.5307	1.6	79	1.516	1.99	No sig. diff.
		Post-test	22.21	80	6.7891					
02	Experim	Pretest	21.74	80	6.119	0.93	79	19.11	1.99	Sig. diff.
		Post-test	40.55	80	5.731					
03	Control	Pretest	21.52	80	6.53	0.99	158	0.21	1.97	No sig. diff
	Experim	Pretest	21.73	80	6.11					
04	Control	Post-test	22.21	80	6.78	0.99	158	18.46	1.97	Sig. diff
	Exp	Post-test	40.55	80	5.73					

Table 2 presents an analysis of pre- and post-test Urdu scores for both control and experimental groups. The control group's mean pre-test score was 21.52 (SD = 6.53), rising slightly to 22.21 (SD = 6.79) post-intervention. The standard error of difference was 1.6, with a calculated t-value of 1.516 (df = 79), which is less than the critical value of 1.99. This indicates no significant difference at the 0.05 level, supporting the null hypothesis: face-to-face instruction did not significantly improve Urdu performance. This suggests limited effectiveness of traditional teaching methods. Conversely, the experimental group, subjected to a blended learning approach, showed a remarkable improvement. Their mean pre-test score of 21.74 (SD = 6.12) rose to 40.55 (SD = 5.73) post-test. With a standard error of 0.93 and a t-value of 19.11 (df = 79), which greatly exceeds the critical value, the results confirm a highly significant difference, even at the 0.01 level. Pre-test scores between the two groups did not differ significantly ($t = 0.2124 < 1.976$), but post-test results were significantly different ($t = 18.46 > 1.976$). Thus, while both groups began at similar performance levels, the intervention notably benefited the experimental group.

This outcome is consistent with findings from Neetika (2021), Sripriya (2022), Cole (2020), and others who reported the effectiveness of blended learning in language acquisition. Although Mohan (2022) and Marie.S (2016) noted a moderate impact of traditional methods, the current study highlights the superiority of blended approaches. Other supporting research includes works by Gambari et al. (2017), Oweis (2018), Zhang & Zhu (2018), and Ginaya (2018). However, it contrasts with findings from Tosun (2015) and Kazu & Demirkol (2014), indicating that contextual factors may influence outcomes. Müller et al. (2023) reported minimal achievement gaps across programs, hinting at the limitations of traditional methods. In contrast, Shurygin et al. (2024) and Naz et al. (2024) found that blended learning greatly enhances academic performance and learner engagement.

Table 3 ***Analysis of the treatment based on demographic variables (post-test scores)***

Rows	Variables	Mean	N	S. D.	SE_M	Df	t-value	Critical value	Decision
01	Male	40.6	40	5.55	1.27	78	0.078	1.99	No sig. diff.
	Female	40.5	40	5.89					

02	Urdu Medium	40.97	40	5.69	1.92	78	5.46	1.99	Sig. diff.
	Hindi Medium	3.45	40	10.75					
03	Graduate parents	38.71	21	6.97	20.5	78	4.01	199	Sig. diff.
	Below Graduate parents	28.69	59	10.64					
04	Salaried	42.84	19	6.11	1.41	78	5.32	1.99	Sig. diff
	Non salaried	29.03	61	10.74					

Table 3 offers insightful evidence on the impact of blended learning in Urdu classrooms. Gender appeared to play a negligible role in academic outcomes: males achieved a mean score of 40.6 (SD = 5.55) and females 40.5 (SD = 5.89). The t-value of 0.078 (df = 78), well below the critical value of 1.99, confirmed no statistically significant gender difference, affirming the hypothesis that gender does not influence post-test Urdu performance.

This aligns with studies by Kazu & Demirkol (2014), Ali (2021), Egara & Mosimege (2024), and others, though conflicting findings exist (e.g., Naz et al., 2024; Hijazi & AlNatour, 2020; Neetika, 2021). In contrast, the medium of instruction demonstrated a significant effect. Urdu-medium students outperformed their Hindi-medium peers (means: 40.97 vs. 30.45), with a t-value of 5.46 (df = 78), clearly exceeding the critical threshold. The null hypothesis regarding the medium of instruction was thus rejected. Interestingly, Jayaraman et al. (2022) reported the opposite, claiming medium has little effect, highlighting contextual variability. Parental education also played a pivotal role. Students with graduate parents significantly outscored those whose parents had lower educational qualifications. A t-value of 4.01 supported the rejection of the null hypothesis. These results are in line with findings from Ali (2021), Liu (2018), Idris et al. (2020), and others, reinforcing that educated parents positively influence academic outcomes. However, Pathak & Bhatia (2019) and Jayaraman et al. (2022) challenge this correlation. Lastly, parental occupation was found to be a decisive factor. Learners from salaried families outperformed their peers from non-salaried backgrounds, with a significant t-value of 5.32. Thus, the hypothesis denying occupational impact was rejected in favor of the alternative. This supports conclusions by Owuor et al. (2022) and Hussain (2021), though Moneva et al. (2020) noted that occupation may not influence self-esteem, a related but distinct factor.

5. Conclusion

In a larger population world, serious questions regarding educational quality are inevitable. The expansion of knowledge has raised serious questions about the quality and quantity of education. Educationists are serious about incorporating the newest and innovative tools and techniques in today's classrooms to cater to a larger number of learners in their pace and flexibility. Swift technological expansions have significantly impacted education, and swapping traditional classrooms with virtual learning, in the presence of teachers and students. In the era of artificial intelligence, blended learning approaches are the need of the hour for today's classrooms. The concept was inserted in the new education policy 2020 in India. Blending traditional classroom practices with digital tools and techniques. The blended learning styles accept the best part of traditional and online learning in normal classrooms. Fusing the classrooms into blended classrooms it is needed for a judicious balance in the elements of traditional and online elements. The present study is carried out for the Urdu learners who opted for Urdu as their mother language at the secondary level. The results were analysed and interpreted after 30 days of lesson teaching and post-assessment. The approach is effective in improving the academic outcomes of secondary students. demographic variables like medium, education of the parents, and income are contributing factors to students' learning while gender does not affect the achievement in this study. The research recommends more studies conducted in Urdu teaching-learning with blended and other innovative tools and techniques or with other variables.

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