
A STUDY OF PROFESSIONAL EFFICACY AND LEARNING STYLE IN RELATION TO THE NORMAL AND BLENDED TEACHING PROCESS OF STUDENT TEACHERS

***¹Sharad Namdev, ²Prof. Hemant Kumar Khandai**

¹Assistant Professor, Takshshila College, Jhirniya, Bhopal.

²Professor and Head, Department of Continuing Education, Barkatullah University, Bhopal.

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***Corresponding Author: Sharad Namdev**

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Assistant Professor, Takshshila College, Jhirniya, Bhopal.

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ABSTRACT

The present study examined the effect of the Normal and Blended Teaching Process, learning style, and gender on the professional efficacy of student teachers. The study was conducted on 120 B.Ed. trainees from two colleges of education in the Bhopal Division of Madhya Pradesh using a quasi-experimental pre-test–post-test control group design. The control group was taught through the Normal Teaching Process, whereas the experimental group was exposed to the Blended Teaching Process integrating face-to-face instruction with digital learning resources. Professional efficacy was measured using the Teachers' Sense of Efficacy Scale, and learning styles were assessed through Kolb's Learning Style Inventory. ANCOVA was employed for data analysis by taking pre-test scores as covariates. The findings revealed that blended teaching provides a more effective and inclusive learning environment for enhancing professional efficacy among student teachers. The findings support the objectives of the National Education Policy 2020 emphasizing digital and technology-integrated teacher education.

INTRODUCTION

Teacher education plays a crucial role in preparing competent and professionally efficient teachers capable of meeting the changing demands of modern education. In the digital era, the teaching-learning process has undergone significant transformation with the increasing integration of Information and Communication Technology (ICT), online learning platforms, and learner-centered approaches. The COVID-19 pandemic further accelerated this shift by promoting blended learning, which combines traditional face-to-face instruction with online

teaching methods. As a result, teacher education institutions are now expected to prepare student teachers who are adaptable, technologically competent, and professionally confident. Professional efficacy is an important attribute among student teachers as it reflects their belief in their ability to effectively manage teaching responsibilities, engage learners, use instructional strategies, and adapt to diverse classroom situations. Student teachers with high professional efficacy generally demonstrate greater confidence, innovation, and instructional effectiveness in both normal and blended teaching environments. At the same time, learning style plays a significant role in determining how student teachers acquire, process, and apply knowledge. Differences in visual, auditory, reflective, collaborative, and experiential learning preferences influence their adaptability to blended teaching processes and technology-supported learning environments.

The transition from traditional classroom teaching to blended learning has created new opportunities as well as challenges for student teachers. While blended learning offers flexibility, accessibility, and enhanced technological exposure, it also demands digital literacy, self-regulation, adaptability, and effective use of ICT tools. Many student teachers experience difficulties related to technological skills, interaction, and adjustment to online instructional practices.

Educational reforms such as the National Education Policy 2020 emphasize digital education, innovative pedagogy, and competency-based teacher preparation. The policy highlights the need to develop technologically skilled, professionally efficient, and reflective teachers capable of functioning effectively in evolving educational settings. Therefore, studying professional efficacy and learning style in relation to normal and blended teaching processes among student teachers is highly relevant for strengthening teacher education and improving the quality of future teaching-learning practices.

Conceptual and Theoretical Framework

Professional efficacy refers to an individual's belief in his or her capability to perform professional responsibilities effectively and achieve desired outcomes in instructional settings. In the context of teacher education, professional efficacy reflects the confidence of student teachers in managing classroom situations, engaging learners, applying instructional strategies, integrating technology, and making appropriate pedagogical decisions (Bandura, 1997). Although self-efficacy refers to a broader belief in one's general capability to perform tasks successfully, professional efficacy specifically focuses on competence related to professional roles and teaching responsibilities. High professional efficacy among student

teachers enhances teaching effectiveness, confidence, motivation, innovation, and adaptability while also enabling them to handle classroom challenges more effectively (Tschannen-Moran & Hoy, 2001). Important dimensions of professional efficacy include classroom management efficacy, instructional efficacy, student engagement efficacy, technological efficacy, communication skills, decision-making ability, and professional confidence.

Learning style refers to the preferred way in which individuals perceive, process, organize, and acquire knowledge. Educational psychologists have emphasized that learners differ in their cognitive and experiential approaches to learning (Kolb, 1984). Learning styles such as visual, auditory, kinesthetic, reflective, active, collaborative, and independent learning influence the manner in which student teachers participate in instructional processes and adapt to technology-supported learning environments. Understanding learning styles is important in teacher education because it affects academic performance, instructional engagement, and technology adoption (Dunn & Dunn, 1993). It also helps in designing learner-centered and flexible teaching approaches suitable for diverse learners.

The normal teaching process primarily involves traditional face-to-face classroom instruction characterized by direct teacher-student interaction, classroom-centered learning, and chalk-and-board methods. While it promotes immediate interaction and classroom discipline, it often lacks flexibility and technological integration. In contrast, blended teaching combines online and offline modes of instruction through digital platforms, virtual collaboration, online assessments, and self-paced learning (Garrison & Kanuka, 2004). Blended learning provides flexibility, accessibility, personalized learning opportunities, and technological competence. However, it also presents challenges such as digital divide, technical difficulties, reduced interaction, and adaptation issues among student teachers.

The present study is supported by several theoretical perspectives related to efficacy, learning, and technology integration. Bandura's (1997) Self-Efficacy Theory and Social Cognitive Theory explain that individuals with stronger efficacy beliefs demonstrate greater confidence, persistence, and adaptability. Kolb's Experiential Learning Theory (1984), the VARK Learning Style Model developed by Fleming and Mills (1992), and Dunn and Dunn's Learning Style Theory emphasize individual differences in learning preferences and instructional engagement. Further, Constructivist Theory supports active and learner-centered knowledge construction, whereas Connectivism Theory highlights learning through digital networks and technological interaction (Siemens, 2005). The Technology Acceptance Model (TAM) developed by Davis (1989) explains the acceptance and effective use of technological

tools in educational settings. Together, these theories establish the relationship among professional efficacy, learning styles, and blended teaching processes in teacher education.

Need and Significance of the Study

The rapid digital transformation in education has significantly changed the nature of the teaching-learning process, especially after the COVID-19 pandemic. Teacher education institutions are now required to prepare student teachers who can effectively function in both the Normal and Blended Teaching Process. The increasing use of Information and Communication Technology (ICT), online platforms, and blended instructional methods has made professional competence, adaptability, and technological readiness essential qualities for future teachers.

Professional efficacy is a crucial factor influencing teaching effectiveness, classroom management, instructional confidence, and adaptability to changing educational environments (Pajares, 1996). Student teachers with higher professional efficacy are generally more confident, innovative, and capable of handling instructional challenges in both traditional and technology-supported classrooms (Woolfolk Hoy & Spero, 2005). In the context of the Normal and Blended Teaching Process, teachers are expected not only to teach effectively but also to integrate technology, maintain learner engagement, and manage flexible learning environments.

Similarly, learning style plays an important role in determining how student teachers acquire, process, and apply knowledge. Learners differ in their preferences for understanding and engaging with instructional content, which directly influences their adjustment to blended learning environments (Cassidy, 2004). Some student teachers adapt easily to digital and self-directed learning, while others face difficulties related to technological interaction and instructional flexibility.

The shift toward blended learning has also exposed practical challenges such as digital anxiety, inadequate technological competence, reduced interaction, and adaptation difficulties among student teachers (Dhawan, 2020). Therefore, understanding the relationship between professional efficacy, learning style, and the Normal and Blended Teaching Process has become essential for improving teacher preparation programmes.

The significance of the study is further strengthened by the National Education Policy 2020, which emphasizes digital education, innovative pedagogy, and competency-based teacher preparation. The findings of the study may help teacher educators, institutions, and

policymakers develop effective training strategies, strengthen ICT integration, and prepare professionally efficient and technologically competent future teachers.

Objectives of the Study

1. To study the status of professional efficacy among student teachers.
2. To study the effect of treatment, learning style, gender and their interaction on professional efficacy of student teachers by taking pre-test scores as covariate.

Research Questions

What is the status of professional efficacy among student teachers trained through normal and blended teaching method?

Hypothesis

H₀₁ There will be no significant effect of treatment, learning style, gender, and their interaction on the professional efficacy of student teachers by taking pre-test scores as covariate.

Research Method

The present study adopted the quasi-experimental method to examine the effect of the Normal and Blended Teaching Process on professional efficacy, learning style, teaching skills, and academic achievement of B.Ed. trainees. The study employed a randomized pre-test–post-test control group design, which is considered appropriate for determining the effectiveness of an instructional intervention under controlled educational conditions. In this design, both the experimental and control groups were pre-tested before the treatment and post-tested after the treatment to determine the effect of the Blended Teaching Process. The control group was taught through the Normal Teaching Process, whereas the experimental group was exposed to the Blended Teaching Process integrating face-to-face instruction with digital learning resources and online activities. The design enabled the investigator to compare the effectiveness of the two teaching processes objectively. The sample consisted of 120 B.Ed. trainees studying in two different colleges of education located in the Bhopal Division of Madhya Pradesh. Out of the total sample, 60 B.Ed. trainees were selected from Swami Vivekanand College of Professional Studies, Sehore, and they constituted the control group. These student teachers continued their training through the normal teaching process. The remaining 60 B.Ed. trainees were selected from Takshshila College, Jhirniya, Bhopal, and they formed the experimental group. In this group, the blended teaching process

introduced by the investigator was implemented. The investigator adopted the purposive sampling technique for selecting the respondents. There were 21 males and 39 females in the control group and 23 males and 37 females in the experimental group. In the present study, the Teaching Process (Normal Teaching Process and Blended Teaching Process) is the independent Variable, alongside gender and learning style were also considered as independent variable. Further, professional efficacy of the student teachers was taken as the dependent variable.

Tools

The professional efficacy of B.Ed. trainees was measured using the *Teachers' Sense of Efficacy Scale (TSES)* developed by Tschannen-Moran and Woolfolk Hoy (2001). The scale consists of 24 items distributed across three dimensions namely Student Engagement, Instructional Strategies, and Classroom Management. The responses are recorded on a 9-point Likert scale ranging from "Nothing" to "A Great Deal." The scale possesses high reliability, with reliability coefficients ranging from 0.87 to 0.91 for different dimensions, and strong construct validity established through factor analysis.

The learning styles of B.Ed. trainees were assessed using the *Learning Style Inventory (LSI)* developed by David A. Kolb (1984). The inventory is based on Kolb's Experiential Learning Theory and measures four learning modes namely Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. The tool consists of 12 items and categorizes learners into Diverger, Assimilator, Converger, and Accommodator learning styles. The inventory has demonstrated satisfactory reliability and construct validity and has been widely used in educational research.

Data Collection Procedure

Prior permission was obtained from the heads of the selected teacher education institutions before conducting the study. The investigator explained the objectives and significance of the study to the respondents and established rapport before administration of the tools. Initially, pre-tests were administered to both the experimental and control groups to assess their levels of professional efficacy and learning style. After the pre-test, the experimental group was exposed to the Blended Teaching Process, while the control group continued through the Normal Teaching Process for the specified duration of the experiment. At the completion of the treatment period, post-tests were administered to both groups. The collected data were carefully tabulated and analyzed. Ethical considerations were strictly maintained throughout

the study. Participation of the respondents was voluntary, confidentiality of responses was assured, and the data collected were used purely for academic purposes.

Analysis and Interpretation

Status of Professional Efficacy among Student Teachers

The first objective of the study was to study the status of professional efficacy among student teachers. For this purpose, the research question formulated was ‘What is the status of professional efficacy among student teachers trained through normal and blended teaching method? Based on the obtained scores, the student teachers were categorized into three levels, namely Low, Average, and High professional efficacy. The results obtained through the analysis are presented in the figure 1.

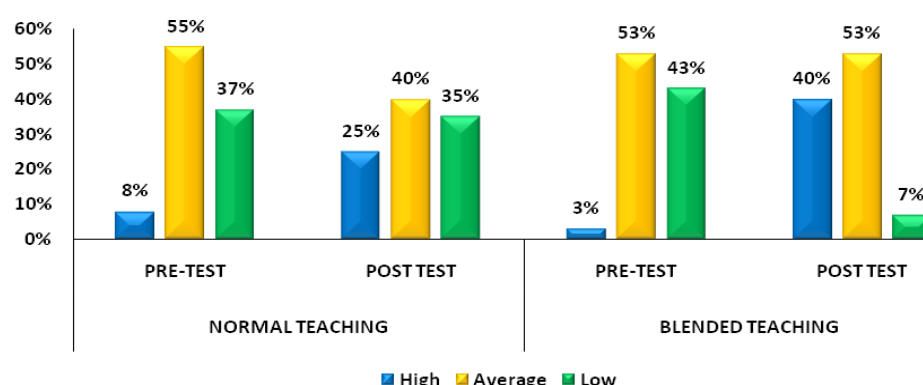


Figure 1 Professional Efficacy of Student Teachers based on Treatment.

From the data presented, it can be observed that in the normal teaching group during the pre-test, only 8% of the student teachers possessed high professional efficacy, 55% had average professional efficacy, and 37% displayed low professional efficacy. After the intervention through the normal teaching method, 25% of the student teachers were found under high professional efficacy, 40% under average professional efficacy, and 35% under low professional efficacy. Among the student teachers assigned to the blended teaching group during the pre-test, 3% belonged to the high professional efficacy category, 53% to the average category, and 43% to the low category. After the intervention through the blended teaching method, 40% of the student teachers were categorized under high professional efficacy, 53% under average professional efficacy, and only 7% under low professional efficacy. The findings indicate greater improvement in professional efficacy among student teachers trained through the blended teaching method.

Effect of Treatment, Learning Style, Gender and their Interaction on Professional Efficacy of Student Teachers by Taking Pre-Test Scores as Covariate

The second objective of the study was to study the effect of treatment, learning style, gender, and their interaction on professional efficacy of student teachers by taking pre-test scores as covariate, for which the hypothesis formulated was ‘there will be no significant effect of treatment, learning style, gender, and their interaction on the professional efficacy of student teachers by taking pre-test scores as covariate.’ The study involved a $2 \times 2 \times 4$ factorial design to examine the influence of treatment (normal teaching and blended teaching), gender (male and female), and learning styles (divergent, assimilative, convergent, and accommodative) on professional efficacy as the dependent variable. Since pre-test scores were considered as covariates to control the initial differences among the groups, Analysis of Covariance (ANCOVA) was employed to analyse the data. The results are presented in Table 1 and Table 2.

Table 1: Summary of ANCOVA for the Effect of Treatment, Learning Style, Gender, and Their Interaction on Professional Efficacy of Student Teachers by Taking Pre-test Scores as Covariate.

Sources of Variance	df	SS _{y.x}	MSS _{y.x}	F _{y.x}	Remark
Covariate (Pre-test Professional Efficacy)	1	1279.914	1279.914	4.28	p<0.05
Treatment (A)	1	7573.805	7573.805	25.326	p<0.01
Gender (B)	1	7.242	7.242	0.024	p>0.05
Learning Style (C)	3	343.678	114.559	0.383	p>0.05
A × B	1	95.125	95.125	0.318	p>0.05
A × C	3	156.756	52.252	0.175	p>0.05
B × C	3	1229.5	409.833	1.37	p>0.05
A × B × C	3	804.797	268.266	0.897	p>0.05
Error	103	30801.822	299.047		

Table 2: Descriptive Statistics of Professional Efficacy by Treatment, Learning Style, and Gender.

TREATMENT	GENDER	LEARNING STYLE	MEAN	SD	N
NORMAL	MALE	Divergent	124.63	19.522	8
		Assimilative	131.1	17.426	10
		Convergent	129	16.31	4
		Accommodative	128.5	24.61	4
		Total	128.38	18.115	26
	FEMALE	Divergent	133.64	23.834	11
		Assimilative	121.13	24.275	8
		Convergent	127.67	13.398	9
		Accommodative	124.5	20.047	6

	Total	Total	127.5	20.63	34
		Divergent	129.84	22.016	19
		Assimilative	126.67	20.722	18
		Convergent	128.08	13.659	13
		Accommodative	126.1	20.723	10
BLENDED	MALE	Total	127.88	19.424	60
		Divergent	145.67	13.456	6
		Assimilative	148.5	12.306	8
		Convergent	147.7	10.155	10
		Accommodative	133.6	17.828	10
	FEMALE	Total	143.38	14.707	34
		Divergent	149.6	12.72	5
		Assimilative	142.25	10.34	4
		Convergent	138.14	19.912	7
		Accommodative	148.4	13.802	10
	Total	Total	144.92	15.022	26
		Divergent	147.45	12.628	11
		Assimilative	146.42	11.619	12
		Convergent	143.76	15.172	17
		Accommodative	141	17.275	20
		Total	144.05	14.738	60
Grand Total	MALE	Divergent	133.64	19.79	14
		Assimilative	138.83	17.386	18
		Convergent	142.36	14.479	14
		Accommodative	132.14	19.118	14
		Total	136.88	17.782	60
	FEMALE	Divergent	138.63	21.915	16
		Assimilative	128.17	22.635	12
		Convergent	132.25	16.827	16
		Accommodative	139.44	19.775	16
		Total	135.05	20.235	60
	Total	Divergent	136.3	20.745	30
		Assimilative	134.57	19.994	30
		Convergent	136.97	16.332	30
		Accommodative	136.03	19.489	30
		Overall Total	135.97	18.99	120

The results of ANCOVA presented in Tables 1 and 2 indicate that the pre-test professional efficacy scores had a significant influence on post-test professional efficacy scores ($F=4.28, p<0.05$), justifying the use of pre-test scores as a covariate to control initial group differences.

A significant main effect of treatment was found on the professional efficacy of student teachers ($F=25.326, p<0.01$). Hence, the null hypothesis related to treatment was rejected. The blended teaching group obtained a higher mean professional efficacy score ($M=144.05, SD=14.738$) compared to the normal teaching group ($M=127.88, SD=19.424$),

indicating that the Blended Teaching Process was more effective in enhancing professional efficacy among student teachers.

However, the main effects of gender ($F=0.024, p>0.05$) and learning style ($F=0.383, p>0.05$) were found to be non-significant. Therefore, the respective null hypotheses were retained. Male ($M=136.88, SD=17.782$) and female ($M=135.05, SD=20.235$) student teachers did not differ significantly in professional efficacy after controlling for pre-test scores. Similarly, student teachers belonging to divergent, assimilative, convergent, and accommodative learning styles also did not differ significantly in professional efficacy. This suggests that the blended teaching-learning process benefited student teachers similarly irrespective of gender and learning style.

Further, the interaction effects between treatment and gender ($F=0.318, p>0.05$), treatment and learning style ($F=0.175, p>0.05$), gender and learning style ($F=1.370, p>0.05$), and the three-way interaction among treatment, gender, and learning style ($F=0.897, p>0.05$) were also found to be non-significant. Hence, the corresponding null hypotheses were retained. This indicates that the effectiveness of the Blended Teaching Process on professional efficacy remained consistent across gender and learning style categories.

The findings revealed that the Blended Teaching Process had a significant positive effect on the professional efficacy of student teachers, indicating that the integration of face-to-face instruction with digital learning experiences enhanced instructional confidence, engagement, and professional competence. Similar findings were reported by Susairaj (2021), Ye, Kuang, and Liu (2022), and Martin et al. (2023), who found blended learning effective in improving teacher self-efficacy, participation, and instructional outcomes. However, the findings contradict Hood (2022), He (2024), and Reynolds (2020), who reported limited or context-dependent effects of blended learning on teacher efficacy. The superiority of blended teaching in the present study may be attributed to continuous interaction, immediate feedback, collaborative learning, reflective practices, and access to diverse digital resources that strengthened mastery experiences and reduced teaching anxiety. From Bandura's self-efficacy perspective, blended learning appears to enhance professional efficacy through mastery experiences, social persuasion, vicarious learning, and supportive learning environments, thereby improving classroom management, instructional strategies, and student engagement.

The findings further revealed that gender had no significant effect on the professional efficacy of student teachers, indicating that both male and female student teachers benefited similarly from the teaching-learning process. Similar findings were reported by Klassen and

Chiu (2010), Tschannen-Moran and Hoy (2007), and Skaalvik and Skaalvik (2014), whereas Cheung (2008), Antoniou, Polychroni, and Vlachakis (2006), and Woolfolk Hoy and Burke Spero (2005) reported gender-based differences in teaching efficacy. The absence of significant gender differences in the present study may be due to equal exposure to collaborative learning, digital resources, instructional support, and reflective learning opportunities within the blended teaching-learning environment, which promoted comparable professional growth among male and female student teachers.

Similarly, learning style was found to have no significant effect on the professional efficacy of student teachers, indicating that student teachers belonging to divergent, assimilative, convergent, and accommodative learning styles benefited similarly from the blended teaching-learning process. The findings are consistent with Cano-Garcia and Hughes (2000) and Pashler et al. (2008), who reported limited influence of learning styles on instructional outcomes, though they contradict Kolb and Kolb (2005) and Bhagat, Vyas, and Singh (2015), who emphasized the role of learning styles in shaping engagement and achievement. The non-significant effect in the present study may be attributed to the flexible and multi-modal nature of blended teaching, which accommodated diverse learner preferences through collaborative tasks, multimedia resources, self-paced learning, and experiential activities.

Further, the interaction effects of treatment and gender, treatment and learning style, gender and learning style, as well as the three-way interaction among treatment, gender, and learning style on professional efficacy were found to be non-significant. Similar findings were reported by Aydın, Demir, and Erdemli (2021) and Teo (2009), whereas Yilmaz (2017) and Liaw and Huang (2013) reported significant moderating effects of learner characteristics in blended environments. The absence of significant interaction effects in the present study suggests that professionally supportive, flexible, and technology-rich blended learning environments can promote relatively uniform professional growth among student teachers irrespective of gender and learning style differences.

Findings of the Study

1. In the normal teaching group, professional efficacy of student teachers showed moderate improvement after the intervention.
2. In the blended teaching group, professional efficacy of student teachers improved substantially after the intervention.
3. Blended Teaching Process was found to be significantly more effective than the Normal Teaching Process in enhancing the professional efficacy of student teachers.

4. Gender had no significant effect on the professional efficacy of student teachers.
5. Learning style had no significant effect on the professional efficacy of student teachers.
6. No significant interaction effect was found between treatment and gender on professional efficacy.
7. No significant interaction effect was found between treatment and learning style on professional efficacy.
8. No significant interaction effect was found between gender and learning style on professional efficacy.
9. The combined interaction effect of treatment, gender, and learning style on professional efficacy was found to be not significant.

Implications of the Study

- The findings suggest that the Blended Teaching Process can be effectively integrated into teacher education programmes to enhance the professional efficacy of student teachers.
- Teacher education institutions should provide greater exposure to ICT-based and blended instructional practices to strengthen instructional confidence and professional competence among future teachers.
- Since blended teaching was found effective irrespective of gender and learning style, teacher educators may adopt blended instructional strategies universally without the need for separate approaches for different learner groups.
- The study highlights the importance of incorporating digital learning resources, collaborative activities, and interactive teaching methods within B.Ed. curricula to improve teaching effectiveness.
- Teacher training institutions should organize workshops, orientation programmes, and hands-on training related to blended learning and educational technology for student teachers.
- The findings support the objectives of the National Education Policy 2020 emphasizing digital education, flexible learning, and technology-integrated teacher preparation.
- The study indicates that professionally supportive and technology-rich learning environments can promote confidence, adaptability, and reflective teaching practices among student teachers.

BIBLIOGRAPHY

1. Antoniou, A. S., Polychroni, F., & Vlachakis, A. N. (2006). Gender and age differences in occupational stress and professional burnout between primary and high-school teachers in Greece. *Journal of Managerial Psychology*, 21(7), 682–690. <https://doi.org/10.1108/02683940610690213>
2. Aydın, E., Demir, E., & Erdemli, Ö. (2021). Investigating teacher candidates' perceptions regarding technology-supported learning environments. *Education and Information Technologies*, 26(4), 4109–4128. <https://doi.org/10.1007/s10639-021-10441-5>
3. Bandura, A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman and Company.
4. Bhagat, A., Vyas, R., & Singh, T. (2015). Students awareness of learning styles and their perceptions to a mixed method approach for learning. *International Journal of Applied and Basic Medical Research*, 5(Suppl 1), S58–S65. <https://doi.org/10.4103/2229-516X.162281>
5. Cano-Garcia, F., & Hughes, E. H. (2000). Learning and thinking styles: An analysis of their interrelationship and influence on academic achievement. *Educational Psychology*, 20(4), 413–430. <https://doi.org/10.1080/713663755>
6. Cassidy, S. (2004). Learning styles: An overview of theories, models, and measures. *Educational Psychology*, 24(4), 419–444. <https://doi.org/10.1080/0144341042000228834>
7. Cheung, H. Y. (2008). Teacher efficacy: A comparative study of Hong Kong and Shanghai primary in-service teachers. *The Australian Educational Researcher*, 35(1), 103–123. <https://doi.org/10.1007/BF03216877>
8. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
9. Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5–22. <https://doi.org/10.1177/0047239520934018>
10. Dunn, R., & Dunn, K. (1993). *Teaching secondary students through their individual learning styles: Practical approaches for grades 7–12*. Allyn & Bacon.
11. Fleming, N. D., & Mills, C. (1992). Not another inventory, rather a catalyst for reflection. *To Improve the Academy*, 11(1), 137–155. <https://doi.org/10.1002/j.2334-4822.1992.tb00213.x>

12. Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(2), 95–105. <https://doi.org/10.1016/j.iheduc.2004.02.001>
13. He, Y. (2024). Teacher self-efficacy in blended learning environments: Challenges and pedagogical adaptation. *Computers & Education Open*, 5, 100145. <https://doi.org/10.1016/j.caeo.2024.100145>
14. Hood, M. (2022). Exploring the relationship between blended learning and teacher efficacy in higher education. *Journal of Digital Learning in Teacher Education*, 38(2), 94–107. <https://doi.org/10.1080/21532974.2021.2016874>
15. Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology*, 102(3), 741–756. <https://doi.org/10.1037/a0019237>
16. Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, 4(2), 193–212. <https://doi.org/10.5465/amle.2005.17268566>
17. Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
18. Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
19. Liaw, S. S., & Huang, H. M. (2013). Perceived satisfaction, perceived usefulness and interactive learning environments as predictors to self-regulation in e-learning environments. *Computers & Education*, 60(1), 14–24. <https://doi.org/10.1016/j.compedu.2012.07.015>
20. Martin, F., Sun, T., & Westine, C. D. (2023). A systematic review of research on online teaching and learning from 2009 to 2018. *Computers & Education*, 159, 104009. <https://doi.org/10.1016/j.compedu.2020.104009>
21. Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543–578. <https://doi.org/10.3102/00346543066004543>
22. Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning styles: Concepts and evidence. *Psychological Science in the Public Interest*, 9(3), 105–119. <https://doi.org/10.1111/j.1539-6053.2009.01038.x>
23. Reynolds, R. (2020). Teacher self-efficacy and technology integration in blended learning environments. *Educational Media International*, 57(3), 193–208. <https://doi.org/10.1080/09523987.2020.1811387>

24. Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, 2(1), 3–10.
25. Skaalvik, E. M., & Skaalvik, S. (2014). Teacher self-efficacy and perceived autonomy: Relations with teacher engagement, job satisfaction, and emotional exhaustion. *Psychological Reports*, 114(1), 68–77. <https://doi.org/10.2466/14.02.PR0.114k14w0>
26. Susairaj, A. X. (2021). Effectiveness of blended learning strategy on teacher trainees' achievement and teaching competency. *Shanlax International Journal of Education*, 9(3), 90–96. <https://doi.org/10.34293/education.v9i3.3980>
27. Teo, T. (2009). Modelling technology acceptance in education: A study of pre-service teachers. *Computers & Education*, 52(2), 302–312. <https://doi.org/10.1016/j.compedu.2008.08.006>
28. Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783–805. [https://doi.org/10.1016/S0742-051X\(01\)00036-1](https://doi.org/10.1016/S0742-051X(01)00036-1)
29. Tschannen-Moran, M., & Hoy, A. W. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education*, 23(6), 944–956. <https://doi.org/10.1016/j.tate.2006.05.003>
30. Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783–805. [https://doi.org/10.1016/S0742-051X\(01\)00036-1](https://doi.org/10.1016/S0742-051X(01)00036-1)
31. Woolfolk Hoy, A., & Burke Spero, R. (2005). Changes in teacher efficacy during the early years of teaching: A comparison of four measures. *Teaching and Teacher Education*, 21(4), 343–356. <https://doi.org/10.1016/j.tate.2005.01.007>
32. Woolfolk Hoy, A., & Spero, R. B. (2005). Changes in teacher efficacy during the early years of teaching: A comparison of four measures. *Teaching and Teacher Education*, 21(4), 343–356. <https://doi.org/10.1016/j.tate.2005.01.007>
33. Ye, J., Kuang, Y., & Liu, X. (2022). Blended learning and teachers' self-efficacy in technology-integrated classrooms. *Education and Information Technologies*, 27(6), 8121–8138. <https://doi.org/10.1007/s10639-022-10963-4>
34. Yilmaz, R. (2017). Exploring the role of e-learning readiness on student satisfaction and motivation in flipped classroom. *Computers in Human Behavior*, 70, 251–260. <https://doi.org/10.1016/j.chb.2016.12.085>.