

The Effect of Teacher Immediacy as Leverage Technology on Online Students' Participation, Academic Achievement and Knowledge Retention

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Abstract

COVID-19 pandemic has led to a major shift towards online learning, emphasizing the importance of teacher immediacy in promoting students' participation, academic achievement and knowledge retention. The transition to online learning has become increasingly prevalent, necessitating a deeper understanding of the factors that influence students' academic performance in environment. One such factor is teacher immediacy, which refers to the perceived psychological closeness between teachers and students. This study investigates the effect of leveraging technology to enhance teacher immediacy on online students' participation, academic achievement, and knowledge retention. A systematic review of relevant literature was conducted, and data were collected from 150 postgraduate students through online survey, achievement test (open book test) and retention test. The study used a quasi-experimental nonequivalent posttest design, with participants assigned to either an experimental group (n=75) or a control group (n=75). The experimental group received online teacher immediacy interventions, which included instant responses, feedback, asking questions, use of personal pronouns etc, while the control group received normal intervention. The experimental group reported higher levels of engagement, motivation, higher levels of participation, academic achievement, and knowledge retention than the control group. The findings of this study suggest that teacher immediacy is an essential factor in online learning environments that positively affect overall students' performance. Teachers may employ language and communication strategies that convey warmth, approachability, and availability to students to enhance student outcomes in online learning environments. The results have implications for educators and instructional designers who are interested in enhancing student engagement, academic achievement, and learning outcomes in online learning settings.

Keywords: Verbal Immediacy, Nonverbal Immediacy, Participation, Academic Achievement, Knowledge Retention

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Introduction

In recent times, there has been a rapid advancement in computing and telecommunications technology. Concurrently, the utilization of online education for teaching and learning has become increasingly prevalent in higher education. This trend is expected to continue in the future (Garrison, Anderson, & Archer, 2000; Ni & Aust, 2008). While e-learning brings forth various opportunities, it also presents challenges for both educators and students. These challenges arise from the potential increase in geographic, temporal, and psychological distance. Online courses, especially those primarily reliant on text and lacking audio and video components, often have limited means of conveying non-verbal messages. The lack of verbal and nonverbal communication in online courses, particularly those without audio or video elements, can make students feel isolated and disconnected. This can create challenges in establishing positive relationships between students and teachers, ultimately impacting student learning outcomes. One effective approach to address this issue is through the use of teacher immediacy behaviors. These behaviors involve teachers adopting communication strategies that minimize the perceived psychological distance between themselves and their students (Ni & Aust, 2008; Woods & Baker, 2004). By employing such strategies, teachers can potentially enhance student learning outcomes by fostering a sense of closeness and engagement in online interactions.

The term "immediacy" was initially defined by social psychologist Albert Mehrabian (1969, p. 203) as referring to "communication behaviors that foster a sense of closeness and nonverbal interaction with others." Mehrabian argued that individuals are naturally inclined towards people and things they like, hold in high regard, and prefer (Mehrabian, 1969, p. 1). Later, Andersen (1979) introduced the concept of teacher immediacy in the context of higher education, describing it as the nonverbal expression of strong emotions, demonstrated through actions such as maintaining eye contact, leaning closer, and smiling. Gorham (1988) further expanded upon teacher immediacy behaviors to include verbal actions such as responding promptly, addressing students by name, and providing personal examples. Teacher immediacy comprises the actions taken by an instructor to enhance students' perception of human interaction, the presence of the instructor, their caring attitude, and a sense of connectedness (Kim & Bonk, 2010).

In a study by Yang, Liu, and Wei (2021), the authors explored the effects of instructor immediacy on online learning outcomes among Chinese college students. The authors found that instructor immediacy was positively associated with students' perceived satisfaction, motivation, and academic achievement in online courses. The authors also found that the use of multimedia to enhance communication was an effective strategy for promoting immediacy and improving online learning outcomes. Similarly, a study by Kim, Kim, and Lee (2021) explored the effects of instructor immediacy on online learning outcomes among Korean college students. The authors found that instructor immediacy was positively associated with students' perceived satisfaction, motivation, and academic achievement in online courses. The authors also found that the use of multimedia to enhance communication was an effective strategy for promoting immediacy and improving online learning outcomes. Lee (2020) in a meta-analysis of 60 studies found that social presence had a significant positive effect on online learning outcomes, including participation rates, academic achievement, and satisfaction. The author also found that immediacy strategies, such as providing clear expectations, offering feedback, and creating a supportive learning environment, were positively associated with social presence and improved online learning outcomes. J. Reneski (2017) conducted research on a study using a non-equivalent control group in a quasi-

experimental design. The researcher tried to explore and measure how having access to synchronous weekly teacher content affected online students' sense of community, social connectivity, and perceived learning. The findings revealed that the ability of weekly instructor content to foster a sense of community was not significantly different across synchronous and asynchronous distribution methods. This study added to current knowledge of the attitudes, goals, and activities of online learners, which is important for the area of education and particularly for distance and online higher education.

Overall, recent research has consistently highlighted the importance of immediacy strategies for promoting students' participation, academic achievement, and knowledge retention in online learning environments. These findings have significant implications for educators and policymakers interested in improving online learning outcomes and promoting the use of effective teaching practices in online courses.

Research Problem

Extensive and intensive development in the field of ICT and sudden eruption of COVID-19 pandemic has caused a rapid shift towards online learning, which has highlighted the importance of effective teacher-student communication in digital learning environments. One key factor in promoting student engagement and learning outcomes is teacher immediacy, which refers to the degree to which teachers create a sense of closeness and interpersonal connection with their students. However, there is limited research on the effect of teacher immediacy, which involves using technology to create this sense of closeness, on online students' participation, academic achievement, and knowledge retention. Therefore, the research problem addressed in this study is to investigate the effect of teacher immediacy on these outcomes in online education. While teacher immediacy has been identified as a key factor in promoting engagement and learning outcomes in traditional face-to-face education, there is limited research on the effectiveness of online teacher immediacy in promoting these outcomes in online education. This study aims to fill this gap in the literature by investigating the effect of teacher immediacy on online students' participation, academic achievement, and knowledge retention.

Rationale of the Study

The rationale behind conducting this study was to gain a deeper understanding of the potential effects resulting from the combination of teacher immediacy and technology within the online education context. As the prevalence of virtual learning environments continues to grow, it becomes increasingly important to explore how the personal connection between teacher and students, facilitated by technological means, can influence the level of active engagement displayed by students in their learning process. Additionally, this study seeks to examine how such a combination can affect students' academic performance and their capacity to retain and apply acquired knowledge over a sustained period. Through the investigation of these dimensions, the intention was to offer valuable insights that can aid teachers and educational institutions in refining their approaches to online instruction, ultimately leading to enhance outcomes in student participation, academic accomplishments, and the retention of learned material.

Research Objective

The research objective of this study is to investigate the effect of incorporating teacher immediacy, facilitated by technology, on the participation, academic achievement, and knowledge retention of students engaged in online learning environments.

Research Hypothesis

H₀: There is no significant difference in the levels of student participation, academic achievement, and knowledge retention when teacher immediacy is combined with technology in online learning environments.

H₁: There is a significant difference in the levels of student participation, academic achievement, and knowledge retention when teacher immediacy is combined with technology in online learning environments

Conceptual Framework

The study was based on Transactional Distance theory and social presence theory. Transactional distance theory focuses on the importance of minimizing the transactional distance to foster the meaningful engagement and effective learning in distance learning. Similarly, the social presence theory, learners perceive a sense of social presence when they feel connected, engaged, and socially connected with others in an online environment. Teacher immediacy plays a crucial role in creating and enhancing social presence which Figure 1 depicts conceptual framework of this study.

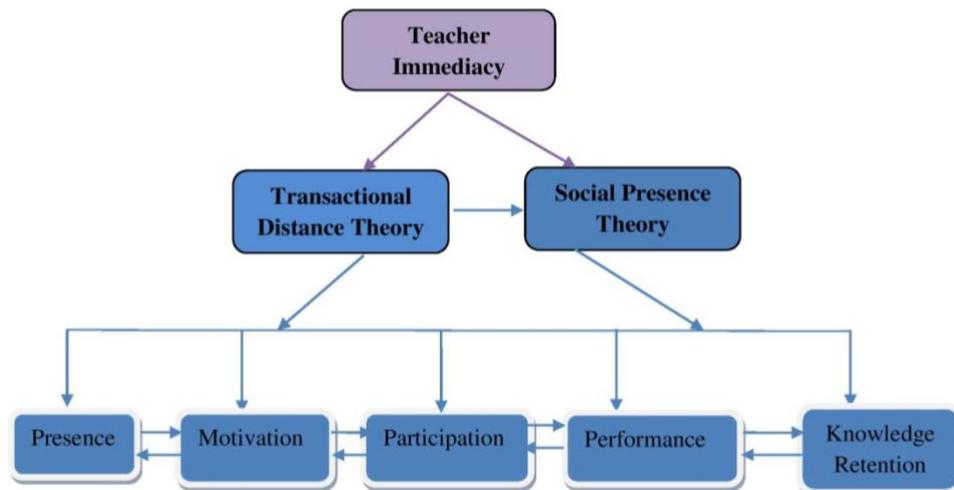


Figure 1: Conceptual Framework of the Study

Research Methodology

Research Design

This study adopted a quasi-experimental nonequivalent control group with posttest research design, which involves comparing two groups of online students who received different levels of digitized teacher immediacy. Verbal and nonverbal teacher immediacy practices were independent variables and the dependent variables were online students' participation and knowledge retention. The participants in this study were online students who were enrolled in a post graduate programme MA Edu. / M.Ed in Allama Iqbal Open University, Islamabad. Research design of this study is mentioned in figure 2.

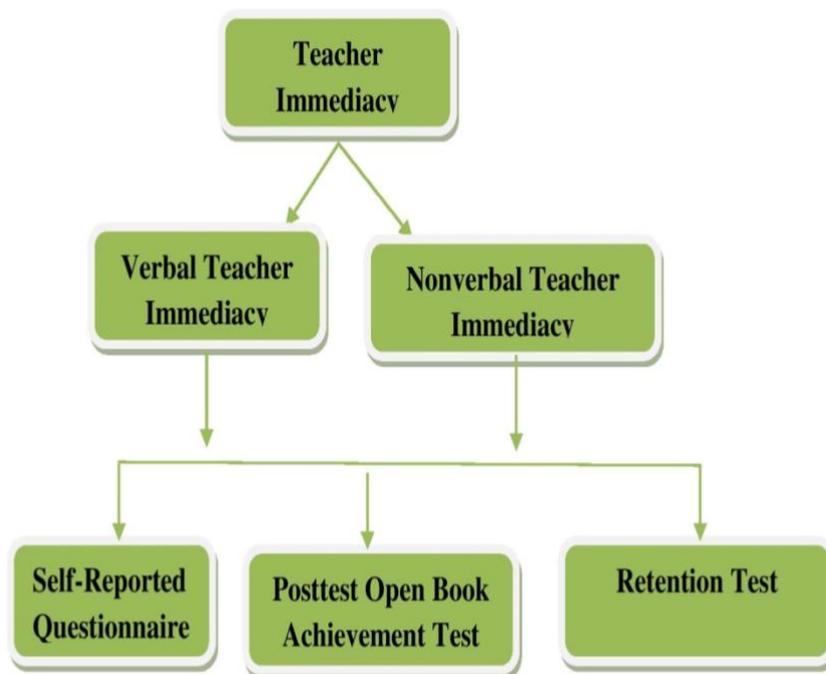


Figure 2: Representation of Research Design

Subjects: The study involved 150 graduate students enrolled in public university in Pakistan. The subjects were parts of intact groups and divided into two groups: an experimental group that received teacher immediacy cues, and a control group that did not receive any immediacy cues.

Sampling Technique: A cluster random sampling technique was used to select the participants because subjects were already a part of intact groups. Subjects were divided into two groups, i.e., experimental and control group (75 x 75).

Procedure: The treatment group (experimental) received a set of teacher immediacy interventions, including personalized and prompt feedback, personalized and empathetic communication, and the use of multimedia tools to enhance the learning experience. Figure 1.3 reflects verbal and nonverbal teacher immediacy practices. The intervention was carried out using university's learning management system (LMS). The research sample consists of

online students enrolled in a postgraduate program. The study incorporates different measures of teacher immediacy like 5-point likert scale questionnaire, open book essay type test and retention test which captures students' perceptions of their instructors' immediacy behaviors, academic achievement, and knowledge retention. Online participation of students was determined through using survey questionnaire by asking questions related to their engagement and interaction in the course during 6-days online workshop (Appendix-A). Participants indicated the frequency of their participation or the extent of their agreement with the statements. Students' academic achievement and knowledge retention was determined through achievement test (open book test) and retention test (Appendix-B).

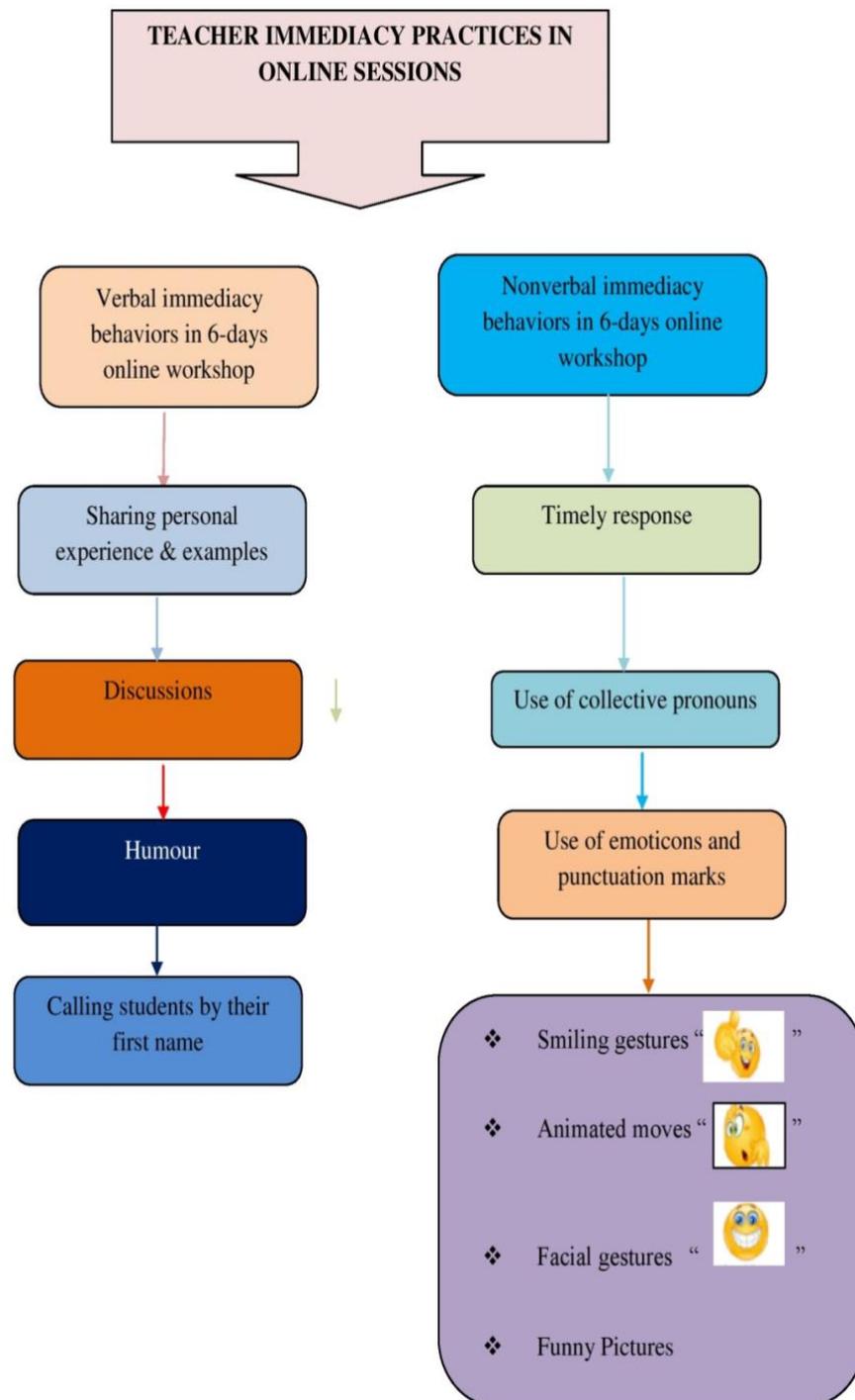


Figure 3: Verbal and Nonverbal Teacher Immediacy Practices

Results

The data collected from the surveys were analyzed using descriptive statistics and inferential statistics. Descriptive statistics were used to analyze the mean, standard deviation, and frequency distribution of the data. Inferential statistics were used to test the research hypotheses using independent samples t-tests.

	<i>N</i>	<i>Test Value</i>	<i>Obtained Means</i>	<i>Mean Difference</i>	<i>df</i>	<i>SD</i>	<i>t-value</i>	<i>p</i>
Total	35	96	155.91	59.91429	34	4.06	10.18	0.000

Table 1.1: One sample t-test on students' views of teacher immediacy practices (TIP) in terms of participation in online learning

The t value (10.18) with (Mean = 155.91, SD = 4.06) in Table 1.1 was found significantly higher than the test value (96) at p.005. Students' mean immediacy practices score at the conclusion of the intervention period is obviously higher than the test value (96). The result supported the alternate hypothesis (H_1) which indicates, there is a significant difference in the participation of the experimental group in online learning after receiving teacher immediacy interventions. The findings demonstrated that there is a statistically significant difference between the test value and the mean score for students (96). The results of the one sample t-test demonstrated that the method of treatment used during the online teaching sessions had a significant effect on the treatment group's post-test responses. From the viewpoint of the student, the research's conclusions provide evidence that the treatment group's exposure to the teacher's immediacy techniques (both verbal and nonverbal) caused them to perform better when participating in online sessions' discussions. Following the intervention, it was determined that students experiencing immediacy practices did not only participate in discussions, but they were more comfortable at studying and leaning the content during online classes

	<i>Condition</i>	<i>N</i>	<i>Mean(\bar{X})</i>	<i>SD</i>	<i>t-value</i>	<i>df</i>	<i>Sig.(X)</i>	<i>Mean difference</i>
Posttest Group	Experimental	35	37.68	4.589	5.96	63	.000	9.544
	Control group	31	28.16	8.810	5.823	46.85	.000	

Table 1.2: Independent sample t test for comparison of experimental and control groups of students

Table reflect that students mean achievement scores is 37.68 and SD = 4.589 of experimental group with thirty five participants and for control group students' mean achievement scores is M = 28.16 and SD = 8.810 with number of participants 31. It reflects that experimental group secured outperformed achievement than control group. Table 4.2's findings show that the t value (5.96) is significant with a p-value of 0.00. The experimental group's mean score (M = 37.68, SD = 4.589) is significantly higher than the control group's mean (M = 28.16, SD = 8.810). The effect size of two compared groups was also determine by Cohen'd formula and found out as 1.07.

	<i>N</i>	<i>Mean</i>	<i>Mean difference</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Achievement test	35	37.7	.40908	4.52296	34	0.698	0.05
Retention test	35	37.4		4.01614			

Table 1.3: Paired sample t-test for comparison of achievement and retention tests of experimental group of students

Table 1.3 demonstrates that a paired sample t-test was used to determine whether there was a significant difference between the two tests. A significant mean difference was reported at $t = 0.698$ with $p < 0.05$. The accomplishment and retention tests' mean scores have a small difference. In contrast to the retention exam, which has a mean score of 37.4, the achievement test has a mean score of 37.7.

	<i>Condition</i>	<i>N</i>	<i>Mean(\bar{X})</i>	<i>SD</i>	<i>t-value</i>	<i>df</i>	<i>Sig.(X)</i>	<i>Mean difference</i>
Retention tests	Experimental Group	35	37.62	4.087	6.48	56	.000	9.063
	Control group	23	28.56	6.57	5.90	33.22	.000	

Table 1.4: Independent sample t tests for comparison of retention tests of experimental group and control groups of students

The findings of Table 1.4 revealed that the t value (6.48) is significant at $p=0.00$. The mean score for the experimental group ($M = 37.62$, $SD = 4.08$) was considerably higher than the mean score for the control group ($M = 28.56$, $SD = 6.57$). The effect size of two compared groups was determined by applying Cohen d formula and it was found 1.37. The findings showed that the mean scores of the two groups differed significantly.

Discussion

The results of this study indicate that the use of teacher immediacy practices along with technology has significant positive effect on students' participation, academic achievement, and knowledge retention in online learning. This study is consistent with previous research on the importance of immediacy in online learning environments (Hartnett et al., 2021; Lee, 2020; Swan & Ice, 2010). The findings of this study support previous research that has highlighted the importance of immediacy in enhancing online learning experiences.

Firstly, the results of the one-sample t-test showed a significant difference in participation rates between the groups with and without immediacy strategies. This finding supports the notion that immediacy strategies, such as timely feedback and frequent communication with students, can increase students' engagement and motivation in online learning. This is consistent with previous research that has shown that students who receive frequent feedback from their instructors are more likely to participate in online discussions and complete assignments (Lee, 2020; Swan & Ice, 2010).

Secondly, the independent t-test indicated a significant difference in academic achievement between the two groups. This finding suggests that immediacy strategies can improve students' academic performance in online learning. The use of immediate feedback and communication with teachers can help students to clarify concepts and address areas of

difficulty, leading to improved academic achievement. This finding is consistent with previous research that has shown that immediacy strategies can enhance students' academic performance in traditional classroom settings (Anderson & Shannon, 1988; Frymier & Houser, 2000).

Finally, the paired t-test revealed a significant improvement in knowledge retention in the group that used immediacy strategies. This finding suggests that immediacy strategies can enhance students' knowledge retention in online learning. The use of immediate feedback and communication with instructors can help students to reinforce their understanding of course materials and retain information better. This finding is consistent with previous research that has shown that immediacy strategies can improve students' knowledge retention in traditional classroom settings (Frymier & Houser, 2000; Witt et al., 2004).

Overall, the results of this study suggest that immediacy strategies can have a significant positive effect on students' participation, academic achievement, and knowledge retention in online learning. So, alternate hypothesis can be justified because this hypothesis suggests that leveraging technology to improve teacher immediacy can lead to notable improvements in student participation, academic achievement, and knowledge retention in online learning environments. The study's findings reveal statistically significant differences and meaningful effect sizes in these aspects as a result of the integration of teacher immediacy with technology. So, the alternative hypothesis is supported.

The findings of this study also have significant implications for educators, policymakers, and researchers interested in improving online learning experiences. The results suggest that instructors should consider incorporating immediacy strategies, such as frequent communication and timely feedback, into their online teaching practices to enhance students' learning experiences and improve their academic performance. Further research is needed to explore the most effective immediacy strategies for different student populations and subject areas. The findings of this study have significant implications for educators, policymakers, and researchers interested in improving online learning outcomes. Educators can incorporate immediacy strategies into their online teaching practices to enhance students' learning experiences and promote better academic outcomes. Policymakers can use the results of this study to design policies that promote the use of immediacy strategies in online learning environments. Finally, researchers can use the findings of this study to conduct further research on the effectiveness of different types of immediacy strategies in online learning and to identify best practices for incorporating these strategies into online teaching practices.

Conclusion

In conclusion, the quasi-experimental nonequivalent control group posttest study examined the effect of leveraging technology with teacher immediacy on online students' participation, academic achievement, and knowledge retention. The findings of the study suggest that integrating teacher immediacy strategies with technology positively influenced these outcomes. Online students who experienced higher levels of teacher immediacy through technology demonstrated increased participation levels, improved academic achievement, and enhanced knowledge retention compared to those who did not. The study's results underscore the significance of establishing a strong teacher-student connection in online learning environments, facilitated by the thoughtful incorporation of technology. Teacher immediacy, demonstrated through real-time interactions, timely feedback, and personalized communication, appears to be a crucial factor in promoting engagement and learning

outcomes in online education. It is important to acknowledge the limitations of the study, such as the specific context and sample size, which may impact the generalizability of the findings. Future research could delve further into the nuances of various technological tools and immediacy strategies, as well as explore their long-term effects on sustained engagement and retention. In light of these findings, educators and instructional designers are encouraged to consider the integration of teacher immediacy techniques alongside technology to enhance the online learning experience. By doing so, they may effectively bridge the physical gaps inherent to online education and create a more interactive and productive learning environment for students.

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	class					
9.	The behavior of teacher during online workshop was exemplary.					
10.	I enjoyed my teacher's style of teaching.					
11.	Online teaching session was interesting for me during discussion					
12.	Online teaching session kept me involved throughout the workshop					
13.	My teacher showed appreciation for my questions and contribution during online class					
14.	I feel confident for my teacher's constant support.					
15.	Online discussion during workshop was ensured					
16.	The teacher ensured involvement of students during online teaching session.					
17.	A quality of teaching-learning process was ensured during online environment.					
18.	My teacher explained how to respond to posts, messages or emails.					
19.	The teacher monitored the students performance throughout the workshop					
20.	My teacher responded to my comments immediately					
21.	The teacher called out each student individually					

	through the use of discussion boards.					
22.	My concepts were clearly built up during online workshop.					
23.	Online discussion helped me to learn things related to the course.					
24.	The online teaching session enabled students to think and retain knowledge about subject.					
25.	I got the opportunities to participate in the class discussion.					
26.	The teacher linked the course concepts with personal experiences.					
27.	Students were asked to raise hands for their query.					
28.	The class teacher used emojis during online class.					
29.	The class teacher used textual images i.e., "LOL," "Greaaaaat Idea" during online teaching session.					
30.	The teacher provided me feedback on my discussion, comments during the workshop..					
31.	My teacher guided me for attempting course related tasks.					
32.	My teacher attempted to answer questions or queries about course contents.					

Appendix-B

**Subject: TEACHING STRATEGIES
LEVEL: MA EDU/M.ED
COURSE CODE: 846**

OPEN BOOK EXAM

Total marks# 50 = 2*25

Read the instructions carefully and attempt questions.

You have to write your answers in your own words and according to the nature of question. Copied content will not be acceptable. Do not exceed word limit of 500 words for each question. Plagiarism will be checked of every student.

Q1: Differentiate between technique, strategy and method of teaching? You have to teach 9th class English subject, topic# Active voice/Passive voice which teaching, method, technique and strategy will you use to teach the particular topic and why you will use it. Support your answer with reasoning. Can any listen simulation technique be used or not?

OR

Q1: How do you view teaching as a system? Support your answer by explaining important teaching variables. Classify the pedagogical models of teaching.

Q2: Develop a model lesson plan on the topic of your own choice by following the steps of any specific approach which you are following throughout your lesson plan with all details mentioned properly?

References

- Andersen, J. F. (1979). Teacher immediacy as a predictor of teaching effectiveness. *Annals of the International Communication Association*, 3(1), 543-559.
- Frymier, A. B., & Houser, M. L. (2000). The teacher-student relationship as an interpersonal relationship. *Communication education*, 49(3), 207-219.
- Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *The Internet and Higher Education*, 10(3), 157-172.
- Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of distance education*, 15(1), 7-23.
- Gorham, J. (1988). The relationship between verbal teacher immediacy behaviors and student learning. *Communication education*, 37(1), 40-53.
- Hartnett, M., St. George, A., & Dron, J. (2021). The role of social presence and immediacy in online learning: A systematic review and future research directions. *Journal of Interactive Learning Research*, 32(3), 355-376.
- Kim, J. H. Y., & Bonk, C. (2010). Instructional immediacy in online faculty experiences. *International Journal of Instructional Technology and Distance Learning*, 7 (8), 31-44.
- Kim, J., Kim, S., & Lee, Y. (2021). Instructor immediacy and online learning outcomes: The mediating role of students' satisfaction and motivation. *Educational Technology Research and Development*, 69(2), 747-768.
- Lee, S. J. (2020). The impact of social presence on online learning outcomes: A meta-analysis. *The Journal of Educational Research*, 113(3), 214-226.
- Mehrabian, A. (1969). Significance of posture and position in the communication of attitude and status relationships. *Psychological bulletin*, 71(5), 359.
- Ni, S. F., & Aust, R. (2008). Examining teacher verbal immediacy and sense of classroom community in online classes. *International Journal on E-learning*, 7(3), 477-498.
- Reniski, J. (2017). A Quasi-Experimental Study of Synchronous Content and Learner Sense of Community (Doctoral dissertation, University of Phoenix).
- Swan, K., & Ice, P. (2010). The community of inquiry framework ten years later: Introduction to the special issue. *The Internet and Higher Education*, 13(1-2), 1-4.
- Witt, J. K., Proffitt, D. R., & Epstein, W. (2004). Perceiving distance: A role of effort and intent. *Perception*, 33(5), 577-590.
- Woods, R. H., & Baker, J. D. (2004). Interaction and immediacy in online learning. *The International Review of Research in Open and Distributed Learning*, 5(2).

Yang, Y., Liu, Z., & Wei, Q. (2021). Investigating the effects of teacher immediacy on online learning: A meta-analysis. *Computers & Education*, 157, 104064.
<https://doi.org/10.1016/j.compedu.2020.104064>

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