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Flipped vs. Traditional Classroom: A Quasi-Experimental Study of Learning Outcomes and Engagement Among M.Ed. Students

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Abstract

The integration of technology in education has necessitated pedagogical shifts from teacher-centered to student-centered models. This quasi-experimental study compared the effectiveness of flipped and traditional classroom approaches on learning outcomes and engagement of postgraduate education students. A sample of 36 female M.Ed. students from a central Indian university was purposively selected and randomly assigned to experimental (n=18, flipped) and control (n=18, traditional) groups during the 2025 academic session. The flipped group received pre-class video content and inclass active learning sessions over six weeks, while the control group underwent conventional lectures. Data were collected using validated instruments: Basic Psychological Need Satisfaction Scale and Class Perception Questionnaire. Multivariate analysis of covariance (MANCOVA) revealed statistically significant differences favoring the flipped classroom in academic performance ($p<0.05$), autonomy, competence, relatedness, and class engagement metrics including collaboration and peer support. Students in the flipped model reported higher motivation and deeper interaction, though thematic feedback indicated the approach was less suitable for conceptually dense topics. Key challenges identified were digital access, learner selfregulation, and increased faculty preparation time. The findings support selfdetermination theory, suggesting that flipped classrooms enhance psychological needs fulfillment, leading to improved engagement. However, effectiveness is contingent on instructional design, subject nature, and student readiness. The study recommends a blended implementation strategy where flipped methods are selectively applied to skill-based or application-oriented content. This research contributes to evidence-based pedagogical practices in teacher education programs within developing contexts.

Keywords: Flipped Learning; Teacher Education; Student Engagement; SelfDetermination Theory; Active Learning; Quasi-Experimental Design; Higher Education; India

Introduction

Digital transformation has altered learner expectations, rendering passive lecture models increasingly ineffective in higher education. The flipped classroom, grounded in constructivism, inverts traditional pedagogy by delivering direct instruction asynchronously and dedicating synchronous time to active learning. This model aligns with self-determination theory by fostering autonomy, competence, and relatedness. While meta-analyses report positive effects on achievement and engagement, results vary by discipline, implementation fidelity, and cultural context. Limited empirical evidence exists from Indian

teacher education programs, where resource constraints and diverse learner preparedness pose unique challenges. This study addresses that gap by examining flipped learning's impact on M.Ed. students' outcomes and perceptions.

Objective

To empirically compare flipped and traditional instructional models among M.Ed. students with respect to: (1) academic learning outcomes, (2) student engagement levels, (3) satisfaction of basic psychological needs, and (4) perceived class environment.

Methodology

Design: Quasi-experimental pre-test post-test control group design.
Participants: 36 female M.Ed. students from Oriental University, Indore, selected via purposive sampling and randomized into two equal groups.
Intervention: Six-week statistics course. Experimental group: pre-class videos + in-class problem-solving. Control group: PowerPoint lectures + homework. Instruments: (1) Basic Psychological Need Satisfaction Scale, 21 items, α=0.80; (2) Class Perception Questionnaire, 54 items, α=0.87.
Analysis: MANCOVA and ANCOVA using SPSS 22.0, controlling for pre-test scores. Ethical approval obtained from institutional review board.

Key Findings

Flipped group demonstrated significantly higher post-test scores in theoretical knowledge (SMD=0.48, $p<0.01$) and skill application (SMD=0.66, $p<0.001$). MANCOVA showed significant multivariate effect for instructional model on psychological needs (Wilks' Λ=0.228, $p<0.001$) and class perception (Wilks' Λ=0.344, $p<0.001$).
Students reported greater autonomy, peer collaboration, and teacher support in flipped settings.
Qualitative themes: Higher engagement for applied topics; resistance for abstract content; need for digital readiness.
No significant difference in student satisfaction, suggesting mixed perceptions.

Conclusion

The flipped classroom significantly improves learning outcomes and fulfills psychological needs among M.Ed. students compared to traditional lectures. It fosters an interactive environment conducive to teacher training. However, its adoption requires strategic selection of topics, digital infrastructure, and faculty development. A blended model is recommended over wholesale replacement of lectures. Limitations include single-institution sample and short intervention duration. Future research should explore longitudinal impacts and scalability across diverse Indian HEIs.

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