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UNDERSTANDING HOW PERCEPTION AND LEARNING SATISFACTION SHAPE ACADEMIC PERFORMANCE IN FLIPPED CLASSROOM OBSTETRICS NURSING EDUCATION: A SYSTEMATIC LITERATURE REVIEW

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Abstract:

The flipped classroom (FC) model has emerged as a transformative pedagogical strategy in health education, particularly in disciplines that require integrating theoretical knowledge and practical skills. This systematic literature review examines the impact of the FC approach on academic performance, student perceptions, and learning satisfaction in nursing education, with a specific focus on obstetrics contexts. Guided by the PRISMA 2020 protocol and SALSA framework, the review synthesizes findings from 28 peer-reviewed empirical studies published between 2019 and 2025. Articles were identified through Scopus, ScienceDirect, and Google Scholar using Boolean search strings and screened for inclusion based on language, empirical nature, and relevance to nursing education. Thematic and narrative synthesis were employed to categorize findings into three core areas aligned with the research questions. Results demonstrate that the FC model significantly enhances academic performance when implemented with structured pre-class materials and interactive in-class activities. Additionally, students generally perceive the model positively, citing improved engagement and autonomy. Learning satisfaction was found to mediate academic outcomes, highlighting the importance of the quality of instructional design and facilitation. However, gaps remain in the application of FC in specialized areas such as obstetrics nursing, as well as in long-term assessments of clinical competence. This review

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provides theoretical insights and practical recommendations for nursing educators, curriculum designers, and researchers seeking to optimize learner outcomes through flipped pedagogies.

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Keyword:

Academic Performance; Flipped Classroom; Learning Satisfaction; Nursing Education; Obstetrics; Student Perception; Systematic Review

Introduction

In the dynamic landscape of healthcare education, particularly in nursing, the demand for student-centered and active learning strategies has led to the widespread adoption of the flipped classroom (FC) model. This pedagogical approach reverses traditional teaching methods by delivering instructional materials outside the classroom, thereby dedicating in-class time to active, collaborative, and practice-based learning. Such restructuring is particularly relevant in obstetrics nursing education, where bridging theoretical understanding with clinical competence is crucial (Andargeery & Al-Kloub, 2024; Meng et al., 2021). The effectiveness of the flipped classroom in improving academic performance has been widely acknowledged in higher education (Barranquero-Herbosa et al., 2022). Several studies report that nursing students exposed to flipped classroom interventions perform better academically, demonstrate higher motivation, and engage more meaningfully with course content (Parut & Agustini, 2018; Sajid et al., 2016). Beyond performance outcomes, the model also encourages the development of critical thinking, autonomy, and communication skills, essential competencies in obstetric care. However, despite these benefits, some studies have shown that the success of flipped classrooms is significantly influenced by students' perceptions and their satisfaction with the learning experience (Zhao, 2023; Abualadas & Xu, 2023).

Systematic reviews have examined the general effects of flipped learning in medical and health education, yet gaps remain in the literature regarding its specific implementation in nursing education, particularly in specialized courses such as obstetrics. Moreover, while academic performance is frequently evaluated, fewer studies have systematically examined how students' perceptions of the learning process or their level of satisfaction correlate with academic success. These subjective dimensions are often underrepresented in existing reviews, despite

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being critical predictors of learning outcomes and course engagement (Ali & Saif, 2023; Wong & Hung, 2020).

This Systematic Literature Review (SLR) addresses these gaps by analysing empirical studies that investigate the flipped classroom model in obstetrics nursing education, focusing on academic performance, student perceptions**,** and learning satisfaction. By doing so, this review provides a more holistic understanding of the factors that influence educational outcomes in flipped learning environments.

Literature Review

Flipped Classroom and Academic Performance in Nursing Education

The flipped classroom (FC) model has gained increasing traction in nursing education for its potential to improve students' academic outcomes through active learning and learner-centered pedagogy. A consistent body of literature confirms that the FC model contributes positively to academic performance, particularly in foundational and clinical courses. Unlike traditional lectures, the FC approach allows students to first engage with instructional content asynchronously through videos, readings, or quizzes before applying their knowledge in interactive, in-class activities.

Parut & Agustini (2018) demonstrated that integrating team-based learning into flipped environments significantly enhanced students' academic performance in surgical nursing, citing improvements in critical thinking and content retention. Meng et al. (2021) further affirmed that when e-learning and peer teaching were combined with FC strategies, students exhibited higher cognitive engagement and better laboratory outcomes. These findings are echoed by Sajid et al. (2016), who concluded that FC and blended learning models yielded higher academic achievement and satisfaction among Saudi nursing students compared to traditional formats.Despite differences in study context and methodology, the overall trend indicates that FC fosters deeper understanding, more robust skill acquisition, and improved academic results, particularly when instructional design aligns with learning objectives and assessment strategies.

Student Perception and Engagement with the Flipped Model

Learner perception is a critical determinant of the success or failure of pedagogical innovation. Across multiple studies, students generally reported favourable views of the flipped classroom, highlighting its flexibility, autonomy, and active engagement as key advantages (Andargeery et al., 2024). Particularly in nursing education, where time constraints and content density are significant challenges, the ability to access learning materials in advance allows students to prepare more effectively for active, collaborative classroom sessions. Wong et al. (2023) found that integrating peer-led strategies into the flipped model boosted student confidence, classroom participation, and overall satisfaction. However, several studies also acknowledged challenges during the initial transition phase. For instance, Zhao (2023) noted that some students initially resisted the FC model, citing increased workload, unclear expectations, or difficulty navigating digital platforms. These issues often stemmed from inconsistencies in course design or a lack of institutional support for digital learning tools.

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In sum, while student perception is largely positive, the success of FC implementation hinges on thoughtful instructional design, technological readiness, and appropriate scaffolding to support learner adaptation.

Learning Satisfaction as a Mediator of Academic Outcomes

Learning satisfaction mediates the relationship between flipped classroom environments and academic achievement. High satisfaction levels correlate strongly with increased engagement, persistence, and performance. Zhao (2023) identified key factors influencing satisfaction, including ease of access to digital resources, instructor feedback, and alignment between pre-class and in-class activities. According to Araby et al. (2024), flipped classroom models led to higher satisfaction and self-confidence among nursing students, positively influencing academic results and classroom interaction.

Palmero et al. (2023) added that perceived satisfaction was higher when flipped classrooms incorporated purposeful multimedia tools and active learning structures. This aligns with Ashfaq (2025), who emphasized the role of technology integration in improving learner satisfaction and overall education quality. Abualadas and Xu (2023) found that medical students enrolled in flipped anatomy courses reported higher levels of satisfaction than those in traditional settings. This was attributed to the active nature of in-class learning and the ability to revisit complex materials at their own pace. Satisfaction was also positively associated with students' confidence, classroom involvement, and sense of accomplishment (Wong et al., 2023). These findings underscore the need for student-centered design and meaningful interactions in flipped classrooms. When learners feel supported, respected, and engaged, their academic and emotional outcomes improve substantially.

Emerging Trends and Gaps in the Literature

Analysis of publication trends from 2019 to 2025 reveals a growing scholarly interest in flipped classrooms, especially during and after the COVID-19 pandemic, which accelerated the adoption of digital and hybrid learning formats. The reviewed studies employed a range of methodologies, including quasi-experimental, cross-sectional, and mixed-method designs. However, most focused on short-term outcomes and general nursing subjects. A critical gap in the literature is the lack of focus on obstetrics nursing education, which involves high-stakes clinical decision-making, emotional sensitivity, and ethical complexity. Very few studies examined the use of flipped learning in obstetrics-specific content, despite its growing importance in professional training. Additionally, longitudinal studies assessing the sustained impact of flipped learning on clinical competence, decision-making, and professional identity are scarce (Gondal et al., 2024). To advance evidence-based nursing education, future research should explore the specialized application of FC in domains such as maternal health and employ qualitative and longitudinal approaches to capture nuanced student experiences and long-term learning outcomes.

Methodology

This Systematic Literature Review (SLR) adhered to the PRISMA 2020 guidelines and applied the SALSA framework (Search, Appraisal, Synthesis, Analysis) to ensure methodological rigor and transparency. The process included comprehensive database searching, clear inclusion and exclusion criteria, thematic synthesis, and structured analysis.

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Search Strategy

To identify relevant studies, a comprehensive search was conducted using the following electronic databases: Scopus, ScienceDirect, and Google Scholar. Boolean operators were used to refine the search results by combining multiple keywords and phrases related to the flipped classroom, nursing education, learning satisfaction, and academic performance. The search was limited to peer-reviewed empirical studies published between 2000 and 2025, written in English, and relevant to nursing education, specifically within obstetrics or clinical settings (Table 1).

Table 1: Search Terms Used

Database	Search String	Date of Search	Number of Results
Scopus	"flipped classroom" AND "nursing education" AND ("academic performance" OR "learning satisfaction")	Dec 12, 2025	[35]
ScienceDirect	"flipped learning" AND "nursing students" AND ("student perception" OR "performance" OR "satisfaction")	Dec 12, 2025	[38]
Google Scholar	"flipped classroom" AND "obstetrics nursing" AND "academic performance"	Dec 12, 2025	[30]

Appraisal: Inclusion and Exclusion Criteria

After the search results were retrieved, duplicates were removed. The remaining articles were screened by title and abstract, followed by full-text review using the following predefined criteria (Table 2).

Table 2: Inclusion and Exclusion Criteria

Criteria	Decision
Peer-reviewed empirical research articles	Included
Published in English	Included
Published between 2000 and 2023	Included
Focus on the flipped classroom in nursing or health education	Included
Focus on obstetrics or clinical nursing learning contexts	Included
Studies reporting perception, satisfaction, or academic outcomes	Included
Reviews, theoretical papers, conference abstracts	Excluded
Studies unrelated to nursing or non-health disciplines	Excluded
Duplicate or inaccessible full-text articles	Excluded

Synthesis Method

A narrative synthesis was employed to systematically organize and report the findings. Articles were grouped into thematic categories based on their primary focus and outcomes:

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a) Effects of the flipped classroom on academic performance
b) Influence of student perceptions on learning outcomes
c) Role of learning satisfaction in shaping performance

This approach enabled the identification of trends, variations, and consistencies across studies.

Analysis

Thematic patterns were extracted across included studies and interpreted in context. Studies were compared by:

a) Year of publication
b) Country/region
c) Type of course (e.g., obstetrics, clinical nursing)
d) Research design (quantitative, qualitative, or mixed methods)
e) Reported outcomes on academic performance, perceptions, or satisfaction.

The analysis highlighted emerging patterns, regional or contextual influences, and gaps in current research, such as limited qualitative insight or underrepresentation of obstetrics-specific outcomes.

PRISMA Flow Diagram

In accordance with the PRISMA guidelines (Page et al., 2021), a comprehensive literature search was conducted to identify empirical studies. The selection process is summarized using a PRISMA flowchart (Table 3), which reflects the number of studies:

a) Identified through database searching.
b) Screened after removing duplicates.
c) Excluded at the title/abstract or full text stages.
d) Included in the final review.

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Identification Of Studies Via Databases

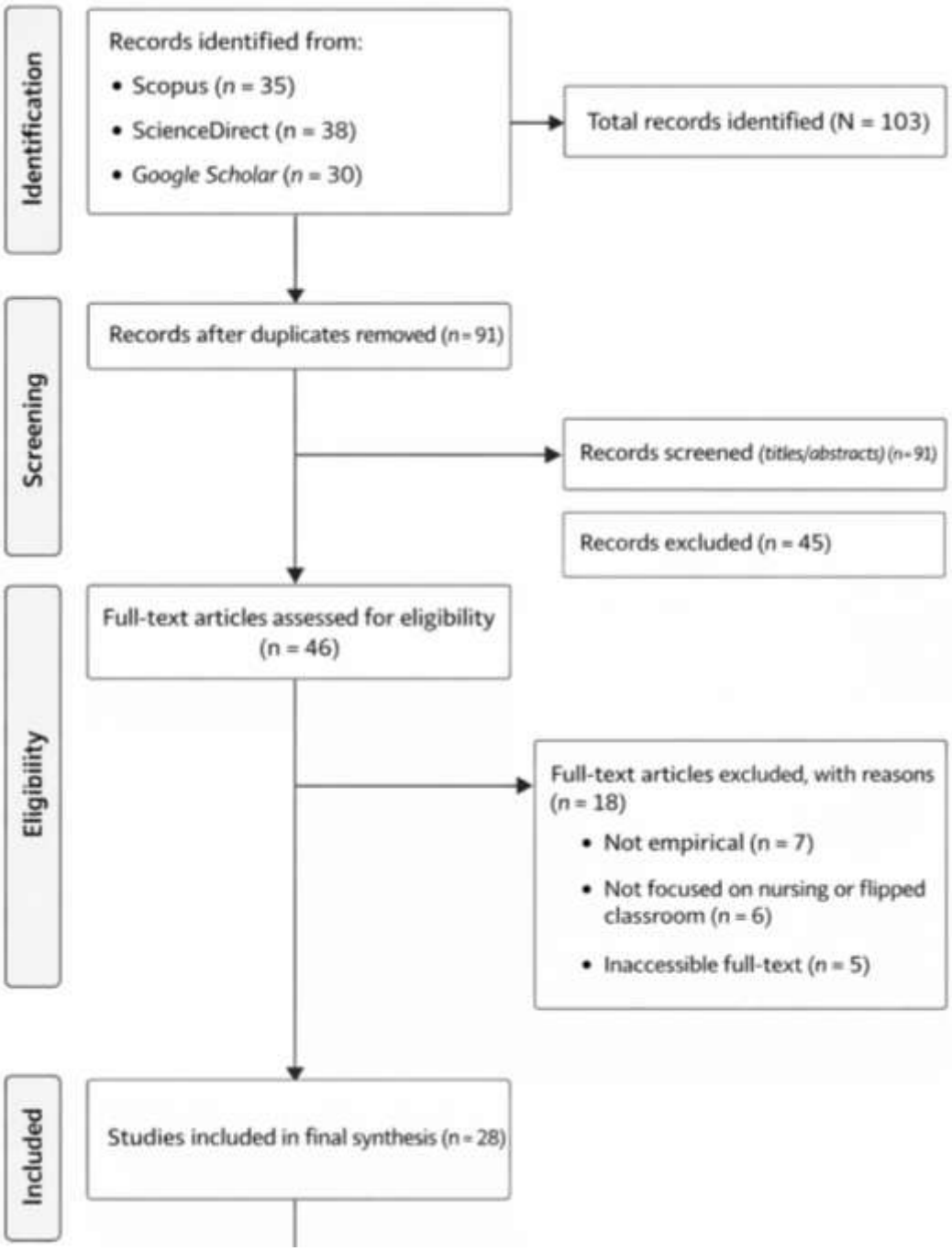

Figure 1: PRISMA Flow Diagram

Results

A total of 103 empirical articles were initially retrieved from three academic databases: Scopus, ScienceDirect, and Google Scholar. After deduplication and screening based on predefined inclusion and exclusion criteria, 28 studies were included in the final synthesis. The findings were thematically organized according to the study's research questions and grouped into three overarching themes (Table 4).

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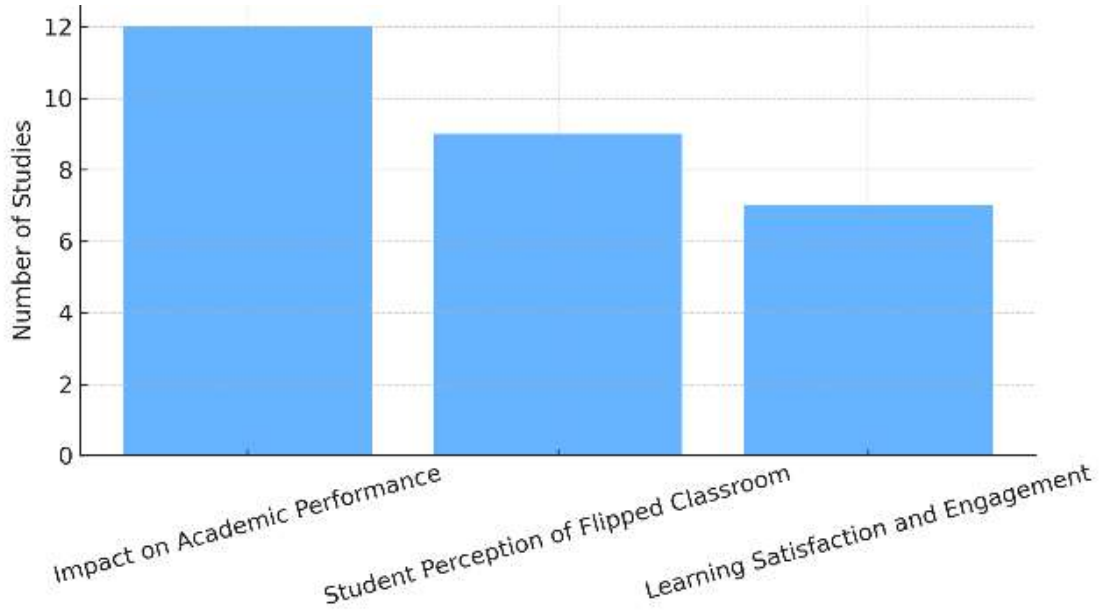
Table 4: Thematic Distribution



Theme 1: Effects of the Flipped Classroom on Academic Performance (RQ1)

Among the 28 reviewed articles, 12 studies specifically addressed the influence of flipped classrooms on academic performance among nursing students. The majority reported significant improvements in exam scores, clinical reasoning, and content mastery when compared to traditional lectures. For instance, Parut & Agustini (2018) found that integrating team-based learning into a flipped model improved performance in surgical nursing. Likewise, Meng et al. (2021) reported superior learning outcomes among students who participated in flipped sessions enriched with peer teaching and digital tools. These studies primarily employed quasi-experimental or comparative methods with pre and post-test designs. Quantitative analysis was the dominant approach, reflecting a strong empirical emphasis on outcome-based evaluation.

Theme 2: Students' Perceptions of the Flipped Classroom (RQ2)

Nine articles explored students' perceptions of the flipped classroom approach. The findings revealed that students appreciated the flexibility, autonomy, and interactivity provided by the flipped model. For example, Andargeery et al. (2024) highlighted how students felt more confident participating in class when they had access to pre-class materials. Despite initial adaptation challenges, most students expressed positive attitudes when instructors provided clear guidance and aligned content with assessment strategies. These studies used mixed-methods or qualitative designs, often incorporating surveys, interviews, or open-ended reflections to capture students' perspectives in depth.

Theme 3: Relationship Between Learning Satisfaction and Academic Performance (RQ3)

Seven studies examined the relationship between learning satisfaction and academic outcomes in flipped classroom settings. The evidence suggests that satisfaction correlates positively with motivation, engagement, and overall academic success. Wong et al. (2023) reported that

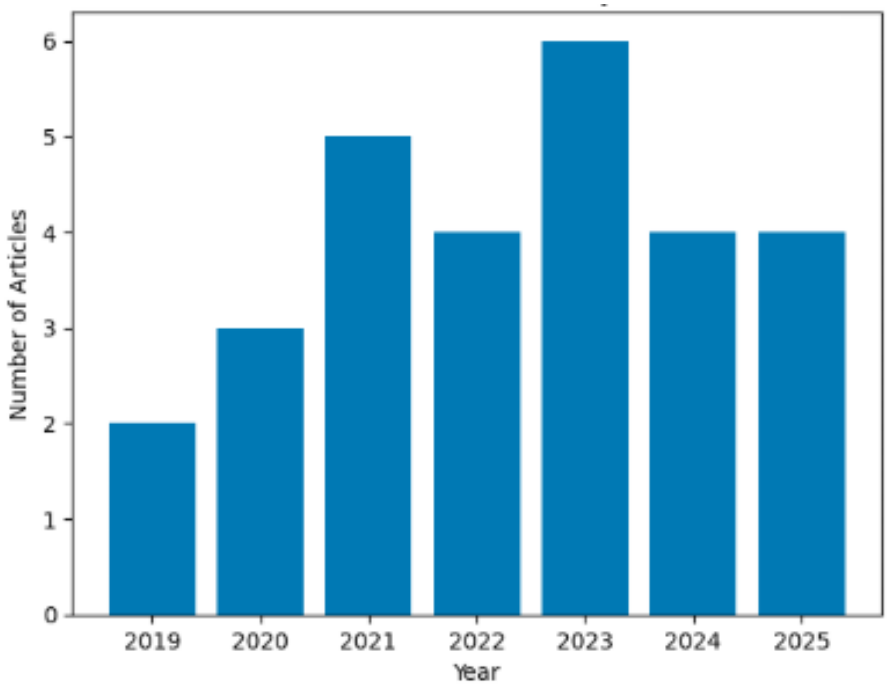
students with higher satisfaction scores were more likely to participate in discussions and perform well in evaluations. Zhao (2023) emphasized the importance of resource quality and classroom facilitation in shaping satisfaction levels.

These studies often used survey instruments with Likert scales to measure satisfaction, and several also included reflective components or focus group data.

Distribution by Year

The included articles (Table 5) show a notable increase in publications in recent years.

Table 5: Distribution of Articles by Year (2019–2025)



This distribution suggests growing interest in flipped learning in nursing education, particularly after the COVID-19 pandemic, which accelerated the adoption of hybrid and online modalities.

Top Journals Publishing Flipped Classroom Nursing Research

The most frequently cited journals in this domain include:

i. *BMC Medical Education* (2 articles)
ii. *BMC Nursing* (2 articles)
iii. *Research and Advances in Education*
iv. *Advances in Physiology Education*
v. *International Journal of Nursing Education*

These venues emphasize empirical, evidence-based innovations in health education and offer a strong platform for future publications in this area.

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Discussion

This systematic literature review explored the effects of the flipped classroom (FC) approach on academic performance, student perception, and learning satisfaction in nursing education, with a particular emphasis on obstetrics contexts. The findings confirm the growing relevance and educational value of flipped classroom strategies in nursing, aligning with global pedagogical trends toward active, student-centered learning.

Academic Impact of Flipped Classrooms

A key insight across the reviewed literature is that the flipped classroom consistently improves academic performance. Most studies reported significant gains in exam scores, conceptual understanding, and clinical decision-making abilities. This is consistent with the findings of Parut and Agustini (2018), who demonstrated that integrating team-based learning into the flipped model led to superior performance outcomes in medical-surgical nursing. Similarly, Meng et al. (2021) highlighted the effectiveness of combining peer learning and digital resources within the FC structure to enhance knowledge retention and lab-based skills. These results corroborate earlier assertions that the flipped classroom facilitates deeper cognitive processing by shifting lower-order learning (e.g., memorization) outside the classroom and using in-class time for higher-order tasks (e.g., application, analysis). The growing body of empirical evidence affirms the flipped model as an effective intervention for improving student outcomes across diverse nursing contexts (Sajid et al., 2016).

Perceptions of the Flipped Classroom Experience

Student perceptions emerged as a critical factor influencing the success of FC implementation. Across nine reviewed studies, students generally reported positive attitudes toward the flexibility, clarity, and engagement enabled by flipped learning. For example, Andargeery et al. (2024) found that pre-class preparation improved students' confidence and readiness for in-class participation, which, in turn, enhanced learning outcomes. However, some studies also revealed initial resistance among students, often due to increased preparation time, inconsistent facilitation, or lack of familiarity with the flipped format (Budak et al., 2025). These mixed perceptions highlight the importance of effective instructional design, in which clear guidance, structured resources, and supportive teaching strategies can significantly shape learners' attitudes. As Zhao (2023) noted, perceived usefulness and ease of access to materials are strong predictors of student satisfaction and engagement in online and hybrid flipped settings.

Learning Satisfaction as a Mediator

Another important theme identified in this review is the role of learning satisfaction as a mediator between instructional design and academic outcomes. Studies such as Wong et al. (2023) and Abualadas and Xu (2023) found that students who expressed high satisfaction with the flipped classroom model were more likely to be motivated, engaged, and academically successful. Satisfaction was linked to several key factors, including instructor support, alignment of materials with assessments, and interactive in-class activities. This finding aligns with constructivist learning theory, which suggests that emotional engagement enhances cognitive engagement, particularly in learner-centered environments. If flipped classroom environments are thoughtfully curated with clear expectations, active support, and meaningful feedback, student satisfaction increases, and academic success is reinforced.

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Emerging Trends and Gaps

A notable trend is the increasing volume of flipped classroom research published between 2020 and 2025, reflecting a broader post-pandemic shift toward blended and online learning models. The COVID-19 crisis accelerated the adoption of flipped pedagogies globally, encouraging educators to reimagine traditional instruction with greater digital integration (Zhao, 2023). However, despite the growing evidence base, gaps remain. Few studies have focused specifically on obstetrics nursing education, despite its unique clinical, emotional, and ethical demands. Additionally, many studies employed quantitative designs, with limited qualitative exploration of lived student experiences in flipped classrooms. Future research should expand in two key directions: (1) investigating FC effectiveness in specialized clinical domains like obstetrics and (2) using longitudinal and mixed method designs to explore the long-term impact of student perceptions and satisfaction on professional competence.

Conclusion

This systematic literature review examined the role of the flipped classroom (FC) in enhancing academic performance, shaping student perceptions, and fostering satisfaction with learning within nursing education, particularly in obstetrics contexts. The review highlights that the flipped classroom model consistently leads to improved academic performance, with students demonstrating stronger conceptual understanding and clinical reasoning skills when compared to traditional lecture-based methods (Parut & Agustini, 2018; Meng et al., 2021). Equally important, this review found that students generally perceive the flipped classroom positively, especially when it is implemented with structured guidance and accessible digital content. However, the initial adjustment to active learning can create resistance if not supported by clear expectations and instructional scaffolding (Andargeery et al., 2024). Furthermore, learning satisfaction emerged as a key mediator, linking instructional quality to academic success. High satisfaction levels were strongly associated with deeper engagement and better academic outcomes (Wong et al., 2023; Zhao, 2023).

Despite the strong evidence base, this review also identified key gaps. There is limited research focusing specifically on obstetrics nursing, a field that presents unique clinical and emotional challenges for learners. Moreover, many studies are short-term and rely heavily on quantitative approaches, suggesting a need for longitudinal and mixed-method research to explore the sustained impact of flipped learning in clinical education. In conclusion, the flipped classroom holds significant promise as a transformative strategy in nursing education. When thoughtfully implemented, it not only enhances academic performance but also positively shapes student attitudes and satisfaction. Future research should expand on these findings by investigating specialized contexts such as obstetrics nursing, incorporating diverse methodologies, and exploring long-term outcomes for clinical competence.

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