Self-Efficacy Among Nursing Students Using Flipped and Traditional Teaching Modalities

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Abstract: *Objective:* To measure the self-efficacy of nursing students taught using both flipped and traditional classroom modalities. *Method:* A quantitative research design was employed. The control group was taught using the traditional classroom model, while the experimental group utilized the flipped classroom model. The study population consisted of undergraduate nursing majors at Shandong University of Traditional Chinese Medicine. Two out of twelve classes were selected through random sampling. *Results:* The study presents an analysis of the t-test results using SPSS, which shows a significant difference when the calculated *P*-value falls between 0.00 and 0.05. The *P*-value obtained was 0.00, indicating a statistically significant difference. *Conclusion:* The teaching model, whether flipped or traditional, has an impact on nursing students' self-efficacy. Students in the flipped classroom exhibited higher self-efficacy in mastering the curriculum.

Keywords: Flipped classroom; Traditional classroom; Self-efficacy; Nursing student.

1. Introduction

1.1. Study background

Technological development has impacted many aspects of people's lives, with education being one of the sectors most affected. With the advancement of modern science and technology and the ongoing implementation of educational reforms, there are now many different teaching models in clinical education, transforming the traditional teaching approach to make learning more engaging.

The flipped classroom is a teaching model where a student's homework involves watching traditional lectures in the form of videos outside of class. Class time is then spent on inquiry-based learning, including activities that would traditionally be considered homework [1]. The flipped classroom model uses internet technology to enhance classroom learning, allowing teachers to spend more time interacting with students

instead of lecturing [2].

Nursing education and practice in China are undergoing significant changes as students face the challenge of solving complex, multi-patient problems. Many students struggle to apply the theoretical knowledge gained from classroom teaching to make critical clinical decisions in patient care. Innovative teaching strategies are needed to better prepare nurses for their future practice [3]. Bandura's theory of self-efficacy suggests that people's judgments of their own abilities play a major role in their self-regulatory processes. Perceived self-efficacy refers to an individual's confidence or belief in their ability to achieve behavioral goals in a specific domain.

Being a teacher in a nursing school in China is also a challenging task, as each instructor typically manages several classes, each with about 50 students. The traditional teaching model dominates, making it difficult for teachers to engage all students effectively. Many students may lose focus, using mobile phones, sleeping, or chatting during class. This traditional model is still prevalent in many nursing schools today.

During the researcher's time at Far Eastern University, a noticeable difference in teaching models was observed. Far Eastern University uses a student-centered teaching model that encourages deep learning and promotes effective knowledge assimilation. The researcher aims to explore the effect of the flipped classroom model on students' self-efficacy, drawing from Albert Bandura's definition of self-efficacy as the belief in one's ability to succeed or complete a task in a given situation. A strong sense of self-efficacy is critical in achieving goals, completing tasks, and overcoming challenges.

1.2. Problem statement

This study aims to measure the self-efficacy of nursing students taught using flipped and traditional classroom modalities. Specifically, it seeks to answer the following research questions:

(1) What is the level of self-efficacy among nursing students taught using the flipped classroom and traditional classroom modalities?

(2) Is there a significant difference in the self-efficacy of nursing students taught using the flipped classroom and traditional classroom modalities?

(3) What recommendations can be made to further enhance the self-efficacy of nursing students?

1.3. Study significance

This study is significant for the following groups:

(1) Nursing students: By adopting the flipped classroom model, nursing students can watch lectures and explore learning materials outside of class. This allows them to expand their knowledge base and engage with the content more deeply. Sharing their learning outcomes in the classroom promotes independent learning and enhances their self-efficacy in education.

(2) Nursing educators: The flipped classroom enables educators to transform their traditional teaching models. Educators can adopt new teaching styles, acting as facilitators and guides rather than solely lecturers. This approach not only reduces the need for classroom management but also improves teaching quality.

(3) Future researchers: The study's findings on nursing students' self-efficacy under different teaching models can provide valuable insights into the effectiveness of the flipped classroom. These results can serve as a theoretical foundation and data source for future research on similar topics.

2. Literature review

2.1. Student self-efficacy

Self-efficacy is defined by Bandura as a person's perception of their ability to produce a specified level of performance that can influence events affecting their lives [4,5]. Self-efficacy shapes how people feel, think, and act. Bandura [5] pointed out that individuals with a high degree of confidence in their abilities perceive difficulties as challenges to be overcome rather than threats to be avoided. Skilled self-regulated learners exhibit a strong sense of efficacy, influencing the knowledge, skills, and goals they set for themselves, as well as their commitment to achieving these goals [6].

Two models are often used to describe the relationship between self-regulated learning and self-efficacy.

2.1.1. Path model

Sadi and Uyar [7] conducted a structural equation modeling study to investigate the direct and indirect relationships between learning self-efficacy and performance. They examined Cognitive Self-Regulation learning strategies (CSR), Meta-cognitive Self-Regulation learning strategies (MSR), and Time and Study Environment Management strategies (TSEM) of Turkish high school students in relation to their efforts to regulate strategies and academic achievement in biology. The path analysis results showed that students with high self-efficacy, MSR learning strategies, TSEM strategies, effort adjustment strategies, and organizational strategies were able to achieve success in biology by completing tasks even in the face of challenges.

Another study by Al-Harthy *et al.* [8] explored the relationship between self-efficacy, task value, goal orientation, metacognitive self-regulation, and learning strategies. The findings indicated that students' self-efficacy, task value, self-regulation, and reflection were positively correlated with their overall academic performance.

2.1.2. Zimmerman cyclic model

Zimmerman [9] explained the process of cognitive engagement (including career goal definition) and self-regulated learning in a three-phase cyclic model of self-regulation: forethought, performance, and self-reflection. The forethought phase includes task analysis (e.g., goal setting, which involves defining career objectives) and self-motivation beliefs. This phase is followed by the performance phase and, finally, the self-reflection phase.

Four predictive self-report concepts—self-efficacy, self-regulatory learning ability, self-directed learning ability, and self-directed vocational ability—affect learning outcomes. Komarraju and Nadler [10] demonstrated that learning self-efficacy positively influences academic achievement.

2.2. Flipped classroom

The concept of the "flipped classroom" was first introduced by Baker [11] and Lage *et al.* [12] in the early 21st century. Its main objective is to enhance the effectiveness of higher education teaching. The flipped classroom provides students with interactive group learning activities and internet-based individual instruction [13].

In this study, the flipped classroom is defined as a model in which students complete learning typically done in class (such as lectures) on their own time by watching videos and accessing other resources. Classroom time is then used for hands-on activities and personalized, interactive learning to foster a deeper understanding. Students apply theoretical concepts discussed in the videos through group problem-solving activities,

simulations, case studies, and discussions [14].

2.3. Traditional classroom

The traditional classroom is a process of teaching and learning that primarily relies on live lectures, with minimal use of Information and Communication Technology (ICT). In this model, the teacher is the main source of knowledge, and students are largely passive recipients. This teacher-centered approach remains prevalent in many higher education institutions today, despite the increasing integration of technology into students' daily lives [15,16].

Today's higher education institutions face the challenge of engaging students in learning and promoting higher-order thinking skills, such as creativity and adaptability. However, the traditional lecture-led classroom remains the most prominent form of learning on college campuses.

2.4. Conceptual framework

This study is grounded in the concept of self-efficacy, which refers to an individual's belief in their ability to perform the behaviors required to achieve specific performance outcomes [5,17,18]. Self-efficacy reflects confidence in one's ability to motivate oneself, control behavior, and manage one's environment.

Albert Bandura, the founder of social cognitive theory, explained that "perceived self-efficacy refers to a belief in one's ability to organize and perform the actions required to achieve desired outcomes" [5,17,19]. In this study, the researcher aims to assess the impact of self-efficacy on students' learning by applying Bandura's theory and selecting suitable measurement tools to gather data. Based on this theoretical foundation, the researcher also seeks to compare the effects of different teaching models on student self-efficacy.

2.5. Research Paradigm

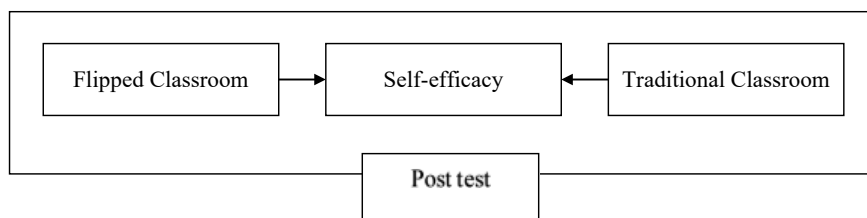**Figure 1** shows the research paradigm of this study.

Figure 1. The research paradigm

2.6. Hypothesis

The following hypothesis was tested at a 0.05 level of significance:

H_0: There is no significant difference in the level of self-efficacy among nursing students using flipped and traditional classroom modalities.

2.7. Definition of terms
2.7.1. Flipped classroom

(1) Conceptual definition: The flipped or inverted classroom refers to the redistribution of classroom and homework activities, shifting the responsibility for learning from teachers to students. Students are

required to complete independent learning (watching lecture videos and accessing materials) before class, while class time is used for discussion and active learning.

(2) Operational definition: In this study, the flipped classroom model involved the researcher collaborating with the instructor to record teaching videos. Nursing students watched these videos, engaged in group discussions, and completed assignments outside class, using class time to share and expand on their knowledge.

2.7.2. Traditional classroom

(1) Conceptual definition: The traditional classroom is teacher-centered, with an emphasis on lecture-based instruction. Teachers present information unilaterally, and students passively absorb the knowledge.

(2) Operational definition: In this study, the traditional classroom approach involved teachers delivering lectures on postpartum hemorrhage using teaching materials, while nursing students simultaneously studied the same topic from textbooks.

2.7.3. Self-efficacy

(1) Conceptual definition: Self-efficacy refers to an individual's belief in their ability to engage in specific behaviors and achieve desired outcomes in a given situation. It reflects confidence in one's abilities.

(2) Operational definition: In this study, self-efficacy was measured using a scale designed to assess nursing students' perceptions of their own learning abilities after exposure to flipped and traditional classroom models.

3. Research methodology

3.1. Research design

This study employed a quantitative research design, specifically a quasi-experimental approach, which uses true experimental methods to address practical problems. The quasi-experimental post-test method was used in this study. The control group was taught using the traditional classroom model, while the experimental group used the flipped classroom model.

3.2. Population and sampling

The study population consisted of undergraduate nursing students from Shandong University of Traditional Chinese Medicine. Random sampling was used to select two classes from a total of 12. One class served as the experimental group, while the other was the control group.

In this study, the nursing students in the two groups were taught using different models—56 students in the experimental group used the flipped classroom model, while 57 students in the control group used the traditional classroom model. To avoid differences in teaching styles and personalities, the same teacher taught both groups.

The researchers recruited students based on the following criteria: (1) Undergraduate students enrolled in 2019; (2) Junior nursing students; (3) Enrolled in maternal and child care courses; (4) Willingness to participate in the research, with informed consent signed; (5) Students who were not undergraduate nursing majors in 2019 were excluded.

3.3. Research locale

The study was conducted at Shandong University of Traditional Chinese Medicine, established in 1978 as a significant national College of Traditional Chinese Medicine. The university is co-administered by the People's Government of Shandong Province and the State Administration of Traditional Chinese Medicine.

3.4. Research instrument

The study employed a basic information questionnaire and a Self-Efficacy Scale. The basic information questionnaire included data on the students' code, age, gender, major, willingness to participate in the study, and signed informed consent. The Self-Efficacy Scale assessed students' perceived belief in their learning self-efficacy and evaluated their perspectives on traditional classroom teaching and flipped classroom teaching.

3.5. Data collection procedure
3.5.1. Pre-intervention phase

Before the formal teaching began, the researcher explained the flipped classroom model to all participants and showed them instructional videos to ensure they understood the concept. Once the teacher was fully acquainted with the flipped classroom model, the researcher and teacher collaborated to implement it.

(1) Phase 1 – securing approval: The researcher obtained written approval from Far Eastern University's Ethics Review Board to conduct the study and from the school where the research would be held.
(2) Phase 2 – selecting respondents: The researcher asked college officials about the class admissions and identified which classes included 2019 undergraduate nursing students.
(3) Phase 3 – securing informed consent: The researcher interviewed students, explained the informed consent process, and obtained their consent. Students agreed to participate in the study by signing the consent form. The teacher also agreed to participate in the study after an interview.
(4) Phase 4 – data collection: Data were collected using questionnaires distributed to all students before the experiment. These included the basic information questionnaire and the Self-Efficacy Scale.

3.6. Teaching implementation
3.6.1. Control group teaching

The 57 nursing students in the control group followed the traditional classroom teaching model. Both the traditional and flipped classrooms used the same teaching topic—postpartum hemorrhage. The researcher collaborated with the teacher to create course materials on postpartum hemorrhage.

3.6.2. Experimental group teaching

The 56 nursing students in the experimental group followed the flipped classroom model. The same teaching content on postpartum hemorrhage was used for both the traditional and flipped classrooms. During the video recording, the teacher delivered the instruction, while the researcher assisted in filming. The specific steps were as follows:

(1) Step 1: The researcher discussed the choice of postpartum hemorrhage as the teaching topic with the teacher and obtained approval. The content focused on key nursing concepts related to postpartum hemorrhage, including nursing evaluation, diagnosis, goals, measures, and evaluation. Homework assignments centered on understanding placental factors causing postpartum hemorrhage, such as

incomplete placental detachment, placental incarceration, and adhesions.

(2) Step 2: The researcher assisted in filming the 25-minute instructional video using cameras, mobile phones, and computers. The video was recorded in the teacher's office.

(3) Step 3: The teacher distributed the video to students via the WeChat group, informing them of the release time.

(4) Step 4: Nursing students in the flipped classroom group watched the video and responded in the group chat by confirming that they had completed the viewing.

(5) Step 5: After watching the video, students were divided into five groups and asked to discuss the content and complete their assigned homework topics. Each group focused on a specific aspect of placental complications, such as incomplete placental detachment or placental incarceration. The groups prepared courseware and ensured all members participated in the process.

(6) Step 6: In the classroom, the groups shared their findings and courseware, interacting with the teacher and other students during the presentations. Students from other groups asked questions, which were answered by the presenting group.

3.7. Data processing and statistical analysis

The researcher used SPSS software to analyze the data obtained from both the experimental and control groups.

3.8. Ethical consideration

(1) Informed consent: Participants were fully informed about the study and provided consent before their involvement. The researchers disclosed all procedures, ensuring transparency.

(2) Vulnerability of research participants: According to the National Bioethics Advisory Commission (NBAC), vulnerable individuals may have difficulty providing voluntary informed consent due to limitations in decision-making capacity or risk of exploitation.

(3) Risk, benefits, and safety: The research involved minimal risk to participants, as the study only required them to complete survey questionnaires.

(4) Privacy and confidentiality: Participants' privacy was protected by controlling the extent, timing, and circumstances of data sharing. Confidentiality was maintained, ensuring that information disclosed in trust was not revealed without permission.

(5) Justice: The fair selection of participants was ensured. All students meeting the inclusion criteria were given a number, and respondents were free to withdraw from the study at any time.

4. Presentation, analysis, and interpretation of data

4.1. Problem 1: What is the level of self-efficacy among nursing students taught using the flipped classroom and traditional classroom modalities?

Table 1 shows the self-efficacy levels among nursing students who were taught using both the flipped classroom and traditional classroom methods. Based on the findings, students in the traditional classroom agreed with Item No. 1, "I am sure about my ability to do the assignments in this class," with a mean of 2.719. On the other hand, students in the flipped classroom agreed on the same item with a mean value of 3.857. This comparison shows that nursing students in the flipped classroom have an average self-efficacy score that is 1.138

points higher than that of students in the traditional classroom, indicating that students in the flipped classroom exhibit a stronger sense of mastery in the course.

For other items in this table, different results were also observed. Nursing students in the traditional classroom, particularly for items 1, 3, 4, 5, and 7, showed a moderate level of agreement about their capability to complete and master the knowledge of the course, while students in the flipped classroom expressed stronger agreement regarding their mastery. The difference between the highest and lowest mean values for "moderate agreement" and "strong agreement" is 1. This indicates a distinct gap between the self-efficacy levels of students in the traditional classroom and those in the flipped classroom.

In Item No. 6, comparing nursing students' self-assessments in traditional classrooms with others in the same class, the overall self-efficacy average was 2.246. This shows that they somewhat agree their learning ability is relatively weaker compared to other students. In contrast, the flipped classroom students had a mean score of 1.607, indicating they did not agree that their learning ability was weaker than others.

Research has shown that the flipped classroom has a significant impact on students' self-efficacy. The results in this study align with previous research, where students in the flipped classroom demonstrated higher self-efficacy (mean = 45.23, SD = 7.75) compared to students in the traditional classroom, who showed lower self-efficacy (mean = 37.29, SD = 7.64)

Table 1. Self-efficacy among nursing students taught using the flipped classroom and traditional classroom modalities

Self-efficacy	Traditional classroom		Flipped classroom	
Items	Mean	Verbal interpretation	Mean	Verbal interpretation
I am sure about my ability to do the assignments in this class.	2.719	Somewhat agree	3.857	Agree
Compared to others in this class, I think I am poor at learning this material.	2.158	Disagree	1.482	Disagree
I am certain I can understand the material presented in this class.	2.877	Somewhat agree	3.696	Agree
I am sure I can do as well as, or better than, other students in this class on exams.	2.842	Somewhat agree	3.642	Agree
I am sure I have the ability to understand the ideas and skills taught in this course.	3.000	Somewhat agree	3.661	Agree
Compared to other students in this class, my learning and study skills are weak.	2.246	Somewhat agree	1.607	Disagree
I am certain I can learn the ideas and skills taught in this class.	2.912	Somewhat agree	3.732	Agree
Overall mean	2.751	Somewhat agree	3.345	Agree

Note: 4.50–5.00, Strongly agree; 3.50–4.49, Agree; 2.50–3.49, Somewhat agree; 1.50–2.49, Disagree; 1.00–1.49, Strongly disagree.

4.2. Problem 2: Is there a significant difference in the self-efficacy levels of nursing students using the flipped classroom and traditional classroom modalities?

Table 2 shows the significant differences in self-efficacy levels between students taught using the traditional and flipped classroom methods. For Item No. 1, "I am sure about my ability to do the assignments in this class," the *t*-value = -10.869, with df = 111, and a *P*-value = 0.000. According to the study's analysis, a significant

difference exists if the calculated *P*-value is between 0.00 and 0.05. In this study, the result is $0.01 > P \geq 0$, and the probability value is 0.00, indicating a significant difference.

As shown in **Table 2**, the null hypothesis is rejected, confirming significant differences between the flipped classroom and traditional classroom teaching models in terms of nursing students' self-efficacy. Fisher *et al.* [20] also found that flipped classrooms significantly contribute to students' perceptions of learning satisfaction and engagement.

This study's *t*-test results for the flipped classroom data show that for all items, the *P*-value is $0.01 > P \geq 0$, further indicating significant differences in the self-efficacy of nursing students under the two teaching models. Thus, the initial hypothesis is rejected, as there are indeed significant differences in the self-efficacy levels of students taught using the flipped classroom model versus the traditional model.

Chen Hsieh *et al.* [21] found that flipped learning not only makes students more active in oral interactions but also significantly improves their knowledge levels, motivation, and self-efficacy, helping them achieve classroom learning objectives.

Table 2. Independent samples test showing the significant difference in self-efficacy between students taught using the traditional and flipped classroom models

Self-Efficacy	Traditional classroom		Flipped classroom		*P*	Interpretation	Decision
Items	*t*	*df*	*t*	*df*			
I am sure about my ability to do the assignments in this class.	-10.869	111	-10.926	83.029	$0.01>P\geq0$	Significant	Reject the H_0
Compared to others in this class, I think I am poor at learning this material.	4.903	111	4.923	92.982	$0.01>P\geq0$	Significant	Reject the H_0
I am certain I can understand the material presented in this class.	-7.444	111	-7.468	98.755	$0.01>P\geq0$	Significant	Reject the H_0
I am sure I can do as well as, or better than, other students in this class on exams.	-8.408	111	-8.415	110.474	$0.01>P\geq0$	Significant	Reject the H_0
I am sure I have the ability to understand the ideas and skills taught in this course.	-6.484	111	-6.497	106.617	$0.01>P\geq0$	Significant	Reject the H_0
Compared to other students in this class, my learning and study skills are weak.	4.698	111	4.714	97.216	$0.01>P\geq0$	Significant	Reject the H_0
I am certain I can learn the ideas and skills taught in this class.	-8.748	111	-8.763	107.651	$0.01>P\geq0$	Significant	Reject the H_0
Overall mean	-12.233	111	-12.259	10.681	$0.01>P\geq0$	Significant	Reject the H_0

4.3. Problem 3: What recommendations can be made to further enhance the self-efficacy of nursing students?

Several studies have demonstrated that self-efficacy is closely related to students' academic performance, as well as their physical and mental health. Based on this research, through discussions with teachers and students and a review of relevant literature, several strategies to improve self-efficacy have been identified:

(1) Increase students' experience of success: Implement an individualized reward structure that allows

students to compare their current achievements with their past performance. As long as students show improvement, it is considered a success, and they are rewarded accordingly. Increasing students' chances of success can boost the self-efficacy of those who perform poorly in class.

(2) Cultivate students' positive attribution: Teachers' emotional reactions and verbal evaluations of students provide critical clues to students' self-attribution. When students perceive their failure as receiving the teacher's sympathy, it can harm their self-esteem and confidence, as sympathy is often viewed as being given to those perceived as weak. On the other hand, if students sense dissatisfaction with the teacher, they may be motivated to improve, protecting their self-esteem and boosting self-efficacy.

(3) Help students set goals: Bandura [17] suggested that self-efficacy influences motivation through goal setting. Teachers can help students set realistic learning schedules and goals tailored to individual needs. Achieving these goals can make students realize their progress, improving their self-efficacy.

(4) Improve students' learning strategies: Students with high self-efficacy and strong academic performance often apply better learning strategies. The more proficient students become at applying these strategies, the more their confidence grows, leading to improved learning and performance. With guidance from subject teachers, students can gradually enhance their strategy application and, as a result, their self-efficacy.

4.4. Evaluation mechanism to motivate students

Teachers should emphasize students' active participation in evaluations by establishing learning portfolios to objectively record their progress. Evaluation should serve as a tool for reflection, enabling students to see their growth and identify potential problems. This self-awareness can boost self-efficacy, helping students gain a deeper understanding of their own learning processes and achievements.

5. Summary, conclusions, and recommendation

5.1. Summary of findings

The results show the following:

(1) For Item No. 1, 86% of the students in the intervention group strongly agreed that they could complete the homework for the course, while only 9% of the students in the control group strongly agreed.

(2) For Item No. 2, none of the students in the intervention group strongly agreed that they performed poorly in class compared to other students, while 9% of the control group strongly agreed that they did poorly compared to their classmates.

(3) For Item No. 3, 70% of the students in the intervention group strongly agreed that they could understand the course, compared to 17% of the control group.

(4) For Item No. 4, 64% of the students in the intervention group strongly agreed that they could perform as well as, or better than, other students on the exam, while only 7% of the control group felt similarly.

(5) For Item No. 5, 66% of the intervention group strongly agreed that they could explain the ideas and skills taught in the course, while 17% of the control group strongly agreed.

(6) For Item No. 6, none of the students in the intervention group strongly agreed that they were less able to learn than others, while 10% of the control group strongly agreed with this statement.

 (7) For Item No. 7, 73% of the intervention group strongly agreed that they could learn the ideas and skills of the subject, compared to 10% of the control group.

Overall, students in the flipped classroom (intervention group) demonstrated higher self-efficacy than those in the traditional classroom (control group), expressing greater confidence in their ability to learn and master the course.

The results also indicate that for Item No. 1, "I am sure about my ability to do the assignments in this class," the *t*-value was -10.869, with df = 111 and a *P*-value of 0.000. According to the analysis, a significant difference exists if the *P*-value falls between 0.00 and 0.05. In this case, the result is $0.01 > P \geq 0$, and the *P*-value of 0.00 indicates a significant difference. The self-efficacy of nursing students in the flipped classroom was higher than that of students in the traditional classroom. According to the responses to Item No. 1, 3, 5, and 7, nursing students in the flipped classroom showed higher self-efficacy toward the course. Additionally, based on Items No. 2 and 6, nursing students in the flipped classroom were more confident and active in collaborative environments compared to those in the traditional classroom. Students in the flipped classroom exhibited better self-efficacy overall.

5.2. Conclusion

The teaching model—whether flipped or traditional—has a significant effect on nursing students' self-efficacy. According to the survey results, the self-efficacy of students in the flipped classroom differs significantly from that of students in the traditional classroom. Nursing students in the flipped classroom exhibit greater self-efficacy regarding course mastery. This is because different teaching models influence students' ability to learn and master course content in varying ways, each playing a critical role in shaping self-efficacy. Additionally, teachers play a crucial role in student learning, as their teaching style and guidance directly impact students and influence their learning outcomes.

5.3. Recommendations

In light of the study's conclusions, the following recommendations are made:

(1) For nursing students: It is recommended that nursing students prepare the course material before each class and review additional relevant resources outside of class to increase their personal knowledge and abilities. Nursing students should also actively share and discuss knowledge with classmates to collaboratively solve problems and enhance understanding.

(2) For nursing education: Nursing educators should foster a positive learning environment in the classroom. They should engage more with students, guide them in learning, and assist them in overcoming any challenges they face. A student-centered approach should be adopted to encourage active learning and knowledge sharing, which can enhance the quality of teaching.

(3) For nursing research: This study compares the flipped classroom teaching model with the traditional teaching model in relation to nursing students' self-efficacy. The data analysis highlights the differences in self-efficacy between the two models. Future researchers are encouraged to address the limitations of this study and conduct new research, using the results and data from this study as a reference for further investigation.

Disclosure statement

The authors have no conflict of interest to declare.

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