International Journal of Social Science and Human Research

ISSN (print): 2644-0679, ISSN (online): 2644-0695

Volume 09 Issue 01 January 2026

DOI: 10.47191/ijsshr/v9-i1-93, Impact factor- 8.007

Page No: 749-754

Research on The Motivation and Incentive Strategies for Medical Students' Participation in Second Classroom Activities in Clinical Basic Skills Learning from The Perspective of Self-Determination Theory

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ABSTRACT: This study explores the motivation and the status of basic psychological needs satisfaction among medical students participating in the second classroom activities of clinical basic skills learning from the perspective of self-determination theory. It proposes corresponding incentive strategies and constructs an innovative model for the second classroom, aiming to provide theoretical support for promoting the transformation of students' intrinsic learning motivation. A questionnaire survey was conducted among medical majors in our university to analyze their internal and external motivations for participating in the second classroom of clinical basic skills learning, as well as the current status of their basic psychological needs' satisfaction. The results indicate that students' intrinsic motivation for participating in the second classroom of clinical basic skills learning is relatively low, while their extrinsic motivation is relatively high. Students with higher academic rankings in their classes exhibited the highest levels of extrinsic motivation. During classroom participation, students' need for autonomy was satisfied to the greatest extent, while their need for relatedness was satisfied to the least extent. The satisfaction of the need for autonomy showed the highest correlation with intrinsic motivation. It is recommended that in second classroom teaching, instructors should design classroom models based on self-determination theory by providing high levels of autonomy support, appropriately setting learning difficulties, and not neglecting teacher-student interaction, thereby fostering and sustaining intrinsic learning motivation in the long term.

KEYWORDS: Self-determination theory; Medical students; Clinical basic skills; Second classroom; Motivation

I. INTRODUCTION

Clinical basic skills are one of the essential core competencies for medical students. As a crucial supplement to traditional classroom teaching, the second classroom provides opportunities for medical students to engage in practical operations and enhance their skills. However, there are differences in the enthusiasm and motivation of medical students to participate in the second classroom, with phenomena such as "mandatory participation" and "reward-driven participation" emerging, which may affect their learning outcomes and skill acquisition levels [1]. Self-Determination Theory (SDT) emphasizes the autonomy, competence, and relatedness underlying individual behavioral motivation. When these basic psychological needs are satisfied, individuals' intrinsic motivation is stimulated, leading to sustained and high-quality learning engagement [2]. Currently, there is limited empirical research on the application of SDT in the context of medical students' skill-based second classroom activities. This study aims to explore the motivation and the status of basic psychological needs satisfaction among medical students participating in the second classroom for clinical basic skills learning, and to propose corresponding incentive strategies, thereby providing insights for optimizing second classroom teaching.

II. SUBJECTS AND METHODS

A. Subjects

A random sampling method was adopted for the questionnaire survey, targeting students from medical majors at our university.

B. Survey Tools

Based on the results of literature review [3-4], the preliminary draft of the questionnaire was designed by integrating classroom evaluation. After the initial draft was developed, five experts reviewed and refined the content to form the final version of the questionnaire. In the pre-experiment, 200 questionnaires were distributed, all of which were collected, with a Cronbach's α coefficient of 0.871. The content of the questionnaire includes general information (gender, grade, major, academic performance, whether serving as a class cadre), motivation for participating in the second classroom of clinical basic skills learning (interest, self-improvement, employment, further education, credit rewards), a survey of basic psychological needs (need for competence, need for relatedness, need for autonomy), as well as the frequency of students' participation in research lectures, volunteer services, and their role as teaching assistants. A Likert 5-point scale (very consistent, somewhat consistent, neutral, somewhat inconsistent, very inconsistent) was used for scoring. The Cronbach's α coefficient for the questionnaire in this study was 0.912, with sub-dimension coefficients ranging from 0.718 to 0.891, all exceeding 0.7, indicating good reliability.

C. Survey Methods

The questionnaire was administered online. A total of 1,000 questionnaires were distributed, with 964 valid responses collected, yielding a valid response rate of 96.4%. Among the respondents, 350 (36.3%) were male and 614 (63.7%) were female. In terms of academic year, 257 (26.7%) were first-year students, 284 (29.5%) were second-year students, 194 (20.1%) were third-year students, and 229 (23.8%) were fourth-year students. Regarding majors, 814 (84.4%) were clinical medicine students, while 150 (15.6%) were non-clinical medicine students. Additionally, 363 (37.7%) served as class cadres, and 601 (62.3%) did not hold such positions. In terms of academic performance, 312 (32.4%) ranked in the top 25% of their class, 352 (36.5%) ranked between the top 25% and 50%, 206 (21.4%) ranked between the bottom 25% and 50%, and 94 (9.8%) ranked in the bottom 25%. This study adhered to ethical guidelines, with informed consent obtained from all participants. Questionnaires were collected anonymously, and the data were used solely for academic research purposes.

D. Statistical Methods

All collected data were compiled and organized. SPSS 27.0 was used for descriptive statistical analysis, correlation analysis, and regression analysis of the data. Count data were described using frequency (%), and group comparisons were conducted using the χ^2 test. Measurement data were expressed as (M ± SD), and group comparisons were performed using independent samples t-tests and one-way ANOVA. A two-sided $P < 0.05$ was considered statistically significant.

E. Research Framework

Based on the perspective of Self-Determination Theory, this study constructs a research framework that categorizes the motivation of medical students to participate in the second classroom of clinical basic skills learning into intrinsic motivation (interest, self-efficacy enhancement) and extrinsic motivation (employment, further education, credit rewards). It investigates the satisfaction of three basic psychological needs among students—autonomy, competence, and relatedness—and analyzes the correlation between intrinsic learning motivation and the fulfillment of these basic psychological needs.

III. RESULTS

A. Motivation for Participation in the Second Classroom of Clinical Basic Skills Learning

The intrinsic motivation of medical students for participating in the second classroom of clinical basic skills learning was 3.69 ± 0.82, while the extrinsic motivation was 3.85 ± 0.70. Extrinsic motivation was significantly higher than intrinsic motivation ($t = -6.683$, $P < 0.001$). The detailed breakdown by dimensions is presented in Table 1. The results indicate that extrinsic motivation currently predominates among students in their participation in the second classroom of clinical basic skills learning, while intrinsic drive is relatively insufficient. Within intrinsic motivation, the score for interest-based motivation was the lowest, which may impact their long-term learning engagement.

Table 1 Current Status of Medical Students' Motivation for Participating in the Second Classroom of Clinical Basic Skills Learning

Project	Dimension	Mean	Standard Deviation
Intrinsic Motivation	Interest	3.39	0.90
	Self-improvement	3.97	0.95
Extrinsic Motivation	Employment	3.57	0.85
	Further Education	4.01	0.90
	Academic Credit Incentive	3.99	0.89

B. ***Comparison of Second Classroom Participation Motivation Among Different Student Groups***

A comparative analysis of second classroom participation across different student groups revealed no significant differences in either intrinsic or extrinsic learning motivation among students of different genders, majors, grades, or whether they held class cadre positions ($P > 0.05$). However, significant differences were observed in the extrinsic motivation for second classroom participation among students with varying academic performance rankings ($P < 0.05$). Specifically, students ranked in the top 25% academically scored the highest in extrinsic learning motivation, as shown in Table2.

Table 2 Comparison of Motivation for Second Classroom Participation among Different Student Groups (M ± SD)

Project	Dimension	N	M±SD	t/F	P
Intrinsic Motivation	Gender	Male（n=350）	3.67±0.86	-0.461	0.645
		Female（n=614）	3.70±0.80		
	Major	Clinical Medicine（n=814）	3.71±0.82	1.579	0.115
		Non-clinical Medicine（n=150）	3.60±0.79		
	Grade	First-year student（n=257）	3.73±0.79	1.386	0.246
		Second-year student（n=284）	3.61±0.84		
		Third-year student（n=194）	3.71±0.83		
		Fourth-year student（n=229）	3.72±0.80		
	Class cadre status	Yes（n=363）	3.75±0.78	1.687	0.092
		No（n=601）	3.66±0.84		
	Academic performance	Front25%（n=312）	3.76±0.82	1.726	0.160
		Front25-50%（n=352）	3.70±0.79		
		Rear25-50%（n=206）	3.66±0.79		
		Rear25%（n=94）	3.62±0.93		
Extrinsic Motivation	Gender	Male（n=350）	3.84±0.70	-0.490	0.624
		Female（n=614）	3.87±0.70		
	Major	Clinical medicine（n=814）	3.87±0.69	1.599	0.110
		Non-clinical medicine（n=150）	3.77±0.78		
	Grade	First-year student（n=257）	3.87±0.66	0.690	0.558
		Second-year student（n=284）	3.87±0.71		
		Third-year student（n=194）	3.89±0.73		
		Fourth-year student（n=229）	3.80±0.72		
	Class cadre status	Yes（n=363）	3.88±0.69	0.825	0.410
		No（n=601）	3.84±0.71		
	Academic performance	Front25%（n=312）	3.96±0.68	4.082	0.007
		Front25-50%（n=352）	3.83±0.70		
		Rear25-50%（n=206）	3.76±0.68		
		Rear25%（n=94）	3.82±0.79		

C. Status of Basic Psychological Needs Satisfaction Among Medical Students in the Second Classroom of Clinical Basic Skills Learning

A comparison of the satisfaction of basic psychological needs experienced by medical students during their participation in the second classroom of clinical basic skills learning revealed that students reported higher mean satisfaction in autonomy needs, while the mean satisfaction in relatedness needs was relatively lower, as shown in Table 3.

Table 3 Status of Basic Psychological Needs Satisfaction among Medical Students in the Second Classroom of Clinical Basic Skills Learning

Project	Mean	Standard Deviation
Autonomy Needs	3.68	0.79
Competence Needs	3.45	0.67
Relatedness Ne	3.29	0.62

D. Correlation Analysis

A correlation analysis was conducted between the intrinsic motivation of medical students participating in the second classroom of clinical basic skills learning and the dimensions of basic psychological needs. The results revealed significant positive correlations between intrinsic motivation and autonomy needs, competence needs, and relatedness needs ($r = 0.450$, $P < 0.05$; $r = 0.340$, $P < 0.05$; $r = 0.260$, $P < 0.05$). Among these, the correlation coefficient between intrinsic motivation and autonomy needs was the highest, while the correlation with relatedness needs was relatively lower, as shown in Table 4.

Table 4 Correlation Analysis between Intrinsic Motivation and Basic Psychological Needs

Relatedness	Intrinsic Motivation
Intrinsic Motivation	1
Autonomy Needs	.450**
Competence Needs	.340**
Relatedness Ne	.260**

IV. DISCUSSION

A. Current Status of Medical Students' Motivation for Participating in the Second Classroom of Clinical Basic Skills Learning

The results of this study indicate that the extrinsic motivation level of medical students participating in the second classroom of clinical basic skills learning is significantly higher than their intrinsic motivation, suggesting that extrinsic motivation plays a dominant role. This is related to medical students' choices in the context of policies such as postgraduate entrance examinations, recommendation for postgraduate studies, and credit rewards, reflecting a phenomenon of “high extrinsic drive and low intrinsic drive.” This highlights the reality of assessment-oriented pressures and a lack of interest. In teaching, efforts should be made to transform “high extrinsic drive” into “intrinsic-extrinsic synergy” to enhance student engagement [5]. An analysis of intrinsic motivation dimensions reveals that the interest dimension has the lowest mean score, while the self-improvement dimension has a higher mean score, indicating that goals related to intrinsic skill enhancement and personal growth are more attractive to learners. There were no significant differences in intrinsic motivation among different categories of students participating in the second classroom of clinical basic skills learning. However, significant differences were observed in extrinsic motivation among students with different academic performance rankings. Students ranked in the top 25% academically exhibited the highest mean score for extrinsic motivation.

B. Current Status of Medical Students' Basic Psychological Needs Satisfaction and Its Correlation with Intrinsic Motivation

The results of this study show that the mean scores for the three basic psychological needs of medical students participating in the second classroom of clinical basic skills learning are all above 3, indicating an overall acceptable level of psychological needs satisfaction. Among these, the mean score for autonomy needs is the highest, suggesting that the autonomy and flexibility embedded in the classroom design are recognized by students. The mean score for relatedness needs is the lowest, indicating that students perceive relatively less emotional support in the classroom. Therefore, while future classroom designs should focus on meeting students' autonomy and competence needs, attention should also be given to fostering teamwork and enhancing emotional interactions between teachers and students.

The significant correlation between the satisfaction of autonomy needs and the enhancement of intrinsic motivation aligns with the perspective of self-determination theory, which posits autonomy as the core of intrinsic motivation [6]. When students perceive that they have the freedom to choose and can select the content and format of the second classroom according to their preferences, the value of the activity itself is internalized, thereby fostering sustained intrinsic motivation [7]. The correlation between competence needs and intrinsic motivation is lower than that of autonomy needs but remains statistically significant. When students believe in their ability to complete classroom tasks, their self-efficacy significantly improves, leading to greater engagement in the classroom and enhancing the inherent appeal of the activities. While the correlation between relatedness needs and intrinsic motivation is the lowest among the three, it is still significant. This suggests that emotional support, such as making students feel "respected and cared for" in classroom activities, may not be the primary condition for activating intrinsic motivation, but it can serve as a catalyst. By fulfilling the need for belonging, it reduces the sense of external control and indirectly supports autonomy [8]. It is recommended that in second classroom teaching, instructors should focus on providing greater autonomy support, tailor teaching to individual students, and appropriately set learning difficulty levels to enhance the learning motivation and engagement of medical students.

C. Content Design and Improvement Strategies for the Second Classroom of Clinical Basic Skills Learning

1) Maintenance: Continue and Expand the "Autonomous Choice" System to Consolidate the Advantage of Autonomy Further establish a diverse learning platform, granting students the right to choose and autonomy in selecting learning modes and formulating study plans to stimulate intrinsic learning motivation. Fully open laboratories (such as virtual simulation training rooms) for students to independently book projects and schedule training sessions. Additionally, establish a tripartite collaborative mechanism of "lead instructor–student teaching assistants–students" in clinical teaching. In this model, senior students serving as teaching assistants participate in the entire process, including pre-class preparation, in-class coordination, and post-class feedback, ensuring seamless integration of theoretical and practical teaching.

Build a scientific research and innovation platform covering clinical and basic research, promoting the "integration of research and teaching" model to strengthen clinical skills and scientific thinking. Encourage students to participate in innovation and entrepreneurship competitions as well as academic contests. Establish a multi-dimensional innovation cultivation system by organizing academic activities to track cutting-edge research and cultivate innovative talents with integrated clinical and scientific research capabilities.

Social Service: Medical students apply their acquired knowledge through social services to enhance practical skills while contributing to community health.

2) Enhancement: Establish a "Classroom-Participation-Feedback-Improvement" Cycle to Better Fulfill Competence Needs By providing appropriate challenges and timely support, students' confidence and learning motivation can be enhanced. Emphasis should be placed on individualized teaching, where tasks of varying difficulty levels are designed based on students' knowledge and skill proficiency, progressing from basic skill training to complex clinical operations. This gradual increase in difficulty caters to the needs of students at different levels. Simulating real clinical scenarios can enhance the practicality of skills and improve students' ability to handle real-world situations. Experienced instructors and clinical experts should be arranged to provide skill guidance, offering one-on-one or small-group tutoring (with no more than five students per group) to help students address challenges in their learning process.

3) Complement: Strengthen Teacher-Student Interaction, Collaborative Practice, and Positive Support to Enhance the Fulfillment of Relatedness Needs Foster positive teacher-student and peer relationships to strengthen students' sense of belonging. Conduct regular teacher-student exchange sessions to understand students' needs and provide timely support and encouragement. Adopt open teaching methods to enhance interaction between teachers and students. In both classroom and practical settings, praise and encourage students to boost their confidence and sense of achievement. Organize team-building activities, such as outdoor development programs and medical knowledge competitions, to enhance cohesion and a sense of belonging among students.

V. CONCLUSION

Based on Self-Determination Theory, this study explored the motivation and the status of basic psychological needs fulfillment among medical students participating in the second classroom of clinical basic skills learning, and proposed corresponding incentive strategies. The findings indicate that medical students in the second classroom of clinical basic skills learning exhibit characteristics of "low intrinsic drive, high extrinsic drive, adequate autonomy, moderate competence, and insufficient relatedness." Future teaching approaches should focus on "stabilizing autonomy, strengthening competence, and enhancing relatedness" to comprehensively improve students' fulfillment of basic psychological needs, thereby promoting and sustaining intrinsic learning motivation over the long term.

ACKNOWLEDGMENT

This work was supported by the General Project of Henan Province Education Science Planning (2025YB0134), Henan Province Innovation Training Program (S202510472032), Xinxiang Social Science Federation Project (SKL-2025-0221),General Project of Henan Province Higher Education Teaching Reform Research and Practice (2024SJGLX0389), Research Project of Henan University Laboratory Work Research Association (ULAHN202327), Key Project of Xinxiang Medical University 2024 Education and Teaching Reform Research and Practice (2024-XYJG-09).

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