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Exploration of the Relationship between Seat Selection and Academic Performance among College Students

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Abstract: The classroom participation is influenced by quality courses and teachers, and seat selection is an indicator of students' willingness to participate in the classroom. This study utilized a questionnaire to explore the dynamic mechanism underlying how teacher-student proximity and course importance affect classroom engagement. A survey on seat selection was conducted with 500 students across four grades (A, B, C, D) based on their academic performance. A simulated classroom was used to ask students about seat selection in different conditions, related to course importance predetermined by the school authorities (C1: important, C2: not important, C0: unknown) and teacher likeability judged by students themselves (T1: very popular, T2: not popular, T0: unknown). Important courses and well-liked teachers encourage students to opt for front seats. The seat selection among students of different grades varied significantly in the conditions that were established, except for C0T1. High-performing students (those allotted A grade) chose seats closer to the front of the class in comparison with their lower-performing peers in all set conditions. Further, course importance has more influence on students' seat choices than the popularity of the teacher. The data collected from low-performing students (with D grade) reflect the opposite results. This study reveals the relationship between classroom seating and performance, emphasizing the importance of enhancing students' classroom participation willingness for the improvement of teaching effectiveness in university.

Keywords: Higher education; Teacher-student proximity; Course importance; Classroom engagement

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1. Introduction

1.1. Learning outcomes for students in higher education

Higher education (HE) plays a fundamental role in the development of a thriving human society that includes numerous knowledgeable and competent individuals in different subjects and fields. Thus, improving the efficiency of HE is of considerable interest to governments. In China, the national government dedicates significant financial resources to HE, as much as 28% of the funds invested in education. However, teaching effectiveness is still constrained by multiple factors. In a teacher centered model, teachers' capabilities directly affect students' learning

outcomes [1]. Moreover, the implementation of student-as-consumer approach at universities in England revealed that a higher consumer orientation was associated with lower academic performance [2].

This phenomenon seems to make the presence of "unpopular teachers" a necessity. Therefore, teacher likeability is considered a subjective factor in this study. On the other hand, HE curricula generally require students to take compulsory courses (considered as an objective factor in this study) on content that does not necessarily interest them, which can be challenging from a student's perspective and affect their learning. Disliked but otherwise important courses often result in some students attending class, but being unwilling to participate in course activities and choosing back seats. Currently, there is little research on the correlation between students' responses to negative and positive learning conditions involving teachers or courses and their academic outcomes.

1.2. Seat choice of students in classroom

In the traditional teacher-centered teaching model, seat selection is a key behavioral indicator of students' classroom participation [3]. Seats may be chosen spontaneously or with purpose. In a lecture-based course with a large cohort, a student's spontaneous seat choice is likely influenced by their perception of the teacher and the importance of the course. Positive perceptions will nudge students to choose seats near or in the front row, where they are better exposed to the teacher and more likely to actively engage in the classroom. In contrast, negative perceptions might lead students to sit further from the teacher, to avoid participation and attention. Even with negative feelings toward teachers and courses, they still choose the front row due to internal motivations (such as academic goals and resilience). In sum, academic achievement and teacher attention are the motivational drivers of students who choose seating in the first rows, while asocial behavior is responsible for seat selection in the back. This highlights the significant influence of a student's personality on their seating choice [4].

1.3. The aim of this study

This study was conducted using a survey questionnaire, which was then distributed by teachers to students during break time. The questionnaire presented scenarios of combinations of different teachers and courses, and students selected their seats on the blueprint of a simulated classroom. Students in different majors were selected to complete the study, such as crop science, biology, agricultural engineering, ecology, agricultural resources and environment, forestry, and plant protection, which use to ensure the universality of research conclusions. We made the following hypothesis: the willingness of students to participate in the classroom (indicated by their seat selection), especially their enthusiasm for learning under unfavorable conditions during lectures, plays a crucial role in shaping their overall learning achievements. Rational thinking helps strengthen this willingness. This study aims to delve into the reasons underpinning student seating choice and to establish whether they are a significant factor in predicting academic attainment.

2. Method

2.1. Study design

To investigate the influence of lecturers and course importance on students' seating choice, we surveyed 500 students in a Chinese university. A two-factor survey method was adopted to explore the impact of teachers' popularity (T) and course importance (C) on students' seat selection. The three levels related to the lecturer are beloved lecturer (T1), unpopular lecturer (T2), and unknown lecturer (T0); meanwhile, those related to the course are important course (C1), unimportant course (C2), and unknown course (C0). The experiment included 8 treatments (T0C1, T0C2, T1C0, T1C1, T1C2, T2C0, T2C1, T2C2), with T0C0 as control. Student results were

divided in groups based on academic performance, which were determined through a comprehensive evaluation of students' final exam scores and usual classroom performance (classroom participation, homework quality, essay, test, group discussion) during 2–4 years in college.

2.2. Data collection

Each participant identified the seat they would take based on different learning conditions, using rows and columns. All participants were divided into four grades (A, B, C, D) because of a comprehensive review of their performance. The evaluation method is based on the grade point (GP) system. Accurately reflecting each student's performance in the course provided a more comprehensive understanding of their academic abilities. In the end, the data of 500 students were successfully retained for subsequent analysis.

2.3. Statistical analysis

A one-way analysis of variance (ANOVA) based on the Tukey s-b(k) was performed to determine significant differences in row variables among the treatment groups using IBM SPSS 21. Two way completely random ANOVA was used to estimate the effects of the two factors (lecturer and course) on the students' choices of row in the classroom.

3. Results

3.1. Variance analysis and correlation analysis

Under the condition of COT1, no significant difference in choice of row numbers among different groups of students was found (**Table 1**). In contrast, across the other treatments, students from different grade levels made significantly different choices regarding the number of rows of seats; Grade A and B students always chose rows of seats closer to the podium, as opposed to students with C and D grades. There was no significant difference in row choice between Grade A and B students. A cross-tabulation analysis of the row number selected by students under different conditions (**Table 1**) revealed that the relationship between the rows selected by students in the T0C0 condition and academic attainment was significant. Under circumstances involving popular teachers and required courses (T1C0, T0C1, T1C1), a significant association between students' seat row preferences and their academic performance was noted. In addition, when it comes to elective courses (T0C2), there was a significant correlation between the row selection and their grades.

Table 1. Variance analysis of rows selected by students with different grades

	C0T0	C0T1	C0T2	C1T0	C1T1	C1T2	C2T0	C2T1	C2T2
A	4.05 ± 2.554c	3.57 ± 2.279a	7.36 ± 4.170b	3.81 ± 2.395a	3.51 ± 2.280b	4.08 ± 2.718b	6.51 ± 4.064a	4.96 ± 3.054b	7.31 ± 4.206ab
B	4.43 ± 2.645bc	3.62 ± 2.203a	7.32 ± 3.827b	3.72 ± 2.433a	3.62 ± 2.248b	4.13 ± 2.653b	6.02 ± 3.479a	5.46 ± 3.454ab	6.86 ± 3.874b
C	5.25 ± 2.921ab	4.17 ± 4.43a	8.34 ± 3.786ab	4.68 ± 2.943a	4.52 ± 2.929a	5.54 ± 4.518a	7.21 ± 3.393a	6.57 ± 3.751ab	8.37 ± 3.627a
D	5.77 ± 2.936a	4.43 ± 2.265a	9.26 ± 3.608a	4.66 ± 2.109a	4.64 ± 2.400a	5.87 ± 3.327a	7.23 ± 3.198a	6.11 ± 2.936a	8.47 ± 3.787a
R	0.209	0.140	0.158	0.185	0.190	0.218	0.153	0.173	0.159
p-value	0.000	0.002	0.001	0.000	0.000	0.000	0.001	0.000	0.001

R: Correlation coefficient with Grade

The different lowercase letters represent the significance of students' row selection at the level of $p \leq 0.05$, for four levels and under certain conditions. The popular lecturer and important course factors (T1C0, C1T0, T1C1) prompted students to generally move towards the front of the class. When students were faced with an unpopular lecturer and non-important course (T2C0, TOC2, T2C2), they were more likely to choose seats in the back rows.

3.2. Interactive analysis

Table 2 reflects that both the lecturers and the importance of the course had a significant impact on seat selection, and there is a significant interaction effect between the two. Overall, the importance of the course had a greater influence on choice of seats than the popularity of the lecturer. This was specifically the case for students with A, B, and C grades. However, seat selection for D-level students was more influenced by the teacher rather than the course status.

Table 2. Interactive analysis of the influence of the course and teacher on students' seat selection

	All students		Grade A		Grade B		Grade C		Grade D	
	***F* value**	**p**	***F* value**	***p***	***F* value**	***p***	***F* value**	***p***	***F* value**	***p***
T	168.721	0.000	29.520	0.000	60.184	0.000	54.512	0.000	33.362	0.000
C	189.122	0.000	34.672	0.000	84.776	0.000	57.779	0.000	15.524	0.000
C*T	34.388	0.000	7.224	0.000	16.365	0.000	9.063	0.000	2.312	0.057

T：Teacher factor；C：Course factor

4. Discussion

The teacher-centered, lecture-based format still dominates most HE systems, especially in densely populated countries like China and India, where large classes of up to 500 students are not uncommon at the undergraduate level [5]. Therefore, research on seating choice in the classroom is crucially needed. Existing studies have focused on observing student behavior, measuring their educational attainment, or soliciting information about their personality via self-reporting methods [6]. However, there exists a dearth of research that directly inquires with students about their motivations for selecting seats within the lecture hall. Given the relevance of this topic in today's HE context, this study investigates students' seating arrangements, focusing primarily on the factors underpinning seating choices and their implications on student behavior and overall academic attainment. This work provides valuable insight into enhancing students' engagement in the classroom.

4.1. Impact of course importance vs teacher likeability on student seat choice

In this study, adult college students' seat selection focuses more on objective factors (the importance of the course) rather than subjective preferences (the popularity of teachers). This phenomenon stems from their higher self-control and rational thinking. According to Ellis and Bernard, rational thinking is a prerequisite for demonstrating resilience, firm beliefs, self-direction, and acceptance in adversity [7]. Therefore, students with a higher level of rationality may still choose front seats to maintain their learning engagement even when facing discomfort.

4.2. Improving students' rational thinking

In addition to teacher and curriculum factors, students inevitably encounter negative situations in other aspects, and rational thinking is crucial for achieving ultimate academic achievement. Rational thinking enhances qualities like grit (perseverance and passion for long-term goals) and resilience (the ability to bounce back from stressful events or situations) [8]. In theory, irrationality can foster unhealthy, negative emotions (e.g., depression, anxiety, anger, shame). Students lacking robust rational convictions may experience stronger emotions in challenging situations, and it may take longer for them to adjust and recover from the obstacles faced. For students with D grades participating in this study, personal preference (reflected in teacher preferences) had a greater impact on seat choice than the more objective factor, course importance, which supports the views shared above regarding rationality. Therefore, we suggest that enhancing students' rational thinking is an effective way to improve the efficiency of HE.

4.3. Effective pedagogical interventions in classroom

In this study, seat selection reflects students' willingness to participate in class and their attention to teachers and course content. We suggest that teachers improve participation from three aspects: first, adopt diverse teaching media. PowerPoint (PPT) is a common tool for teachers to convey information. Avoid fatigue caused by excessive content in slides; appropriately adding videos and animations can attract attention and cultivate students' interest in the course. Second, increase in-class discussions. The importance of questioning as a teaching and learning strategy has been fully demonstrated [9]. Questioning and discussions are effective ways to attract the attention of uninterested students. Third, introduce a classroom reward mechanism. Studies have shown that reasonable implementation of rewards and punishments can have a positive impact on students' motivation and performance [10].

4.4. Methodological considerations and limitations

In this study, students may not have necessarily been able to obtain their desired seat location if it was occupied by other students. We only investigated students' willingness to take a seat in the classroom, without factoring in the effort they would invest for a seat, such as arriving early. In the future, the relationship between classroom seat selection and students' academic achievements can be studied more rigorously through classroom photography.

5. Conclusion

This study reveals through classroom seat selection behavior that sitting in the front row reflects students' rational cognition of the course value and their level of learning engagement, while students with a D-grade are prone to being influenced by emotional factors such as teachers' popularity. The research indicates that rational thinking is positively correlated with academic performance, and decisions dominated by emotional preferences tend to reduce classroom participation. It is suggested that higher education should incorporate the cultivation of rational thinking into the core of teaching reform, and enhance students' decision-making rationality through logical training, critical questioning, and multi-perspective speculative practice, so as to optimize teaching efficiency.

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