

# Impact of Enhanced Student Attentiveness on Student Performance: A Comparative Study between Interactive and Traditional Teaching Methods

Lulu Xia<sup>1</sup>, Zicheng Wang<sup>2,b</sup>, Linxiao Wang<sup>1,a,\*</sup>

<sup>1</sup> School of Pharmacy, Jiangxi Science & Technology Normal University, Nanchang, Jiangxi, China

<sup>2</sup> Pingxiang Agricultural Science Research Center, Pingxiang, Jiangxi, China

<sup>a</sup> wanglinxiao542@163.com, <sup>b</sup> 2664393846@qq.com

\*Corresponding author

**Keywords:** Student Performance, Student Attentiveness

**Abstract:** This study investigates the impact of teaching methods on student performance, focusing on two groups—New Mode and Traditional Mode—across categories such as Routine, Final Exam, and Total Scores. The New Mode group, subjected to interactive teaching methods and engaging classroom activities, consistently outperformed the Traditional Mode group. Statistical analyses, including line and bar charts, reveal significant differences in academic performance between the groups. These findings strongly suggest that the innovative pedagogical approaches adopted in the New Mode group are more effective for academic achievement. The study provides a comprehensive understanding of the factors affecting student attentiveness and lays the groundwork for future research into the specific elements contributing to higher academic performance. It supports the hypothesis that adopting the strategies from the New Mode could enhance educational outcomes in broader settings.

## 1. Introduction

Undergraduate education holds a critical position in higher education systems, serving as the cornerstone of advanced learning. It aims to equip students with a strong academic foundation and specialized knowledge, preparing them for future careers and further postgraduate education. In the rapidly evolving era of the 21st century, characterized by the swift growth of knowledge and information economies, competition for employment and international talent acquisition has intensified. As a result, higher education institutions need to adapt their training objectives, career planning, curricular structures, and pedagogical methods to align with the specific aims and contents of foundational educational reforms<sup>[1]</sup>. Moreover, the modernization of higher education requires educators to focus not only on students' academic achievements but also on their moral character and political education<sup>[2]</sup>. To ensure the quality of education, many higher education institutions emphasize the importance of Outcome-Based Education (OBE) systems, which aim to measure students' performance objectively and effectively for the continuous improvement of courses<sup>[3]</sup>.

Several pervasive issues in undergraduate classrooms act as obstacles to the development of undergraduate education. Research indicates that the main challenges include: 1) The rapid societal development has led to the integration of many subjects with advanced technologies, such as theory combining more with big data, which undergraduate or graduate students find hard to access<sup>[4]</sup>; 2) The continuous evolution of educational reforms places increasingly high demands on educators, leading to a relative scarcity of innovative teaching modes<sup>[5]</sup>; 3) Changes in societal development have altered talent demands, making the cultivation of innovative talents who can meet societal needs a hot topic in applied undergraduate educational research<sup>[6]</sup>; 4) Student attentiveness in classrooms significantly affects educational outcomes and remains a focus of ongoing concern.

Student attentiveness is influenced by multiple dimensions. Contemporary students, living in an age of information overload, are often distracted by various electronic devices and social media, making it challenging for them to concentrate for extended periods<sup>[7]</sup>. Additionally, classroom

teaching methods and content may not align with students' interests, leading to disengagement<sup>[8]</sup>. Personal factors like lack of adequate sleep, improper diet, or health issues may also impact their focus<sup>[9]</sup>. Some students may have attention-deficit disorders or other learning challenges, further hindering their ability to concentrate<sup>[10]</sup>.

In this study, various strategies such as interactive teaching methods, engaging classroom activities, and real-life cases, as well as necessary support and resources, are employed to address the issue of student attentiveness. After grouping students into new and traditional modes, it was found through routine, classroom, and test assessments that multi-modal strategies significantly improve student attentiveness and consequently their academic performance. This study provides foundational research for enhancing student attentiveness.

## **2. Method description**

To better evaluate the benefits of increased attentiveness on student learning, this study initially employs a general class-separation teaching model, dividing students into a Traditional Group (18 students) and a New Mode Group (19 students). The experimental group, or the New Mode Group, is subjected to interactive teaching methods, more engaging classroom activities, and real-world case applications, while the control group, or the Traditional Group, continues with conventional teaching methods. Subsequently, the effectiveness of these methods is assessed through routine, classroom, and examination scores.

This academic approach aims to provide a comprehensive understanding of the factors affecting student attentiveness and proposes solutions that could significantly improve their academic performance. The methods employed to improve student attentiveness can be categorized into several key areas:

Guiding students to focus on real-world examples related to classroom content<sup>[11]</sup>. Utilizing technology and multimedia learning to create a supportive and effective classroom atmosphere, enhancing student engagement<sup>[12]</sup>. Real-time monitoring of student status, collecting data on classroom behaviors, and establishing quantified guidance protocols<sup>[5]</sup>. Educators should shift their perspectives on teaching and learning, transitioning from mere knowledge impartation to stimulating student involvement, sparking their thought processes, associations, and innovations<sup>[13]</sup>.

## **3. Results and discussion**

The study aims to compare the academic performance between two groups of students—New Mode and Traditional Mode—across different scoring categories, namely Routine, Final Exam, and Total Scores. The goal is to evaluate the effectiveness of teaching or learning methods in the New Mode group as compared to the Traditional Mode group. The data serves as a basis for further investigation into what contributes to superior performance and how these methods could be applied more broadly for improved educational outcomes.

### **3.1. Line chart analysis: a clear gap in total performance**

The line chart clearly illustrates the superior performance of the New Mode group over the Traditional Mode group in terms of total scores displayed in Figure 1. The consistent high scores and less variance within the New Mode group may indicate more effective teaching methods or student engagement compared to the Traditional Mode. The significant difference in score distribution between the two groups suggests that whatever methods or practices are being employed in the New Mode group seem to be yielding better academic outcomes. Therefore, it might be beneficial to investigate the specific factors contributing to the New Mode group's higher performance for potential implementation in broader educational settings.



Figure 1 Performance Comparison Between New Mode and Traditional Mode.

### 3.2. Bar chart analysis: consistent superiority across categories of new mode group

The New Mode group consistently performs better than the Traditional Mode group across all types of scores displayed in Figure 2. The differences are most noticeable in routine and total scores, which could imply that the teaching or learning methods employed in the New Mode are more effective for overall academic performance. The final exam scores are comparatively close between the two groups, indicating that both groups were somewhat equally prepared for the final assessments. However, the slightly higher median and maximum scores in the New Mode group suggest that the higher routine and total scores did contribute to a marginally better final exam performance. Overall, these results could be an endorsement for further investigating the effectiveness of the teaching or learning methods used in the New Mode group.

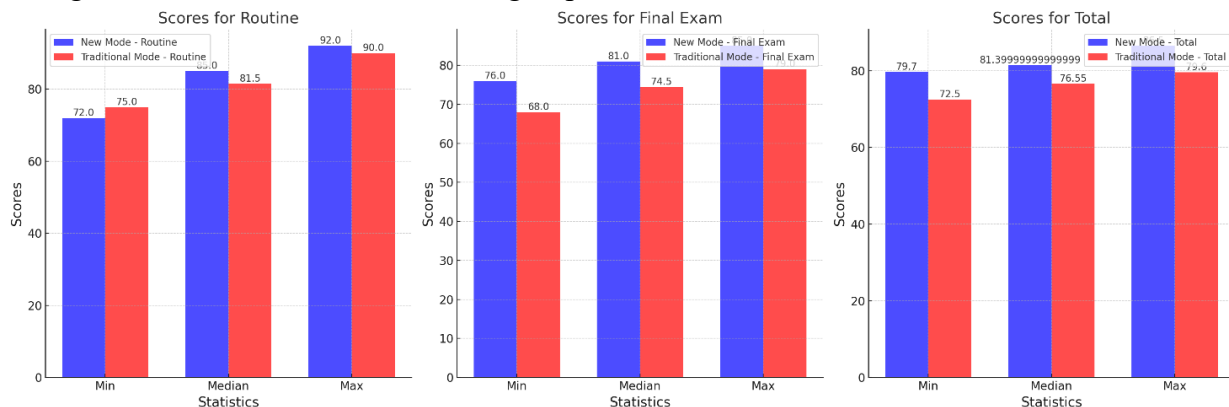


Figure 2 "Routine Score Statistics", "Final Exam Score Statistics", and "Total Score Statistics".

## 4. Conclusion

The New Mode group shows a consistent and considerable advantage in academic performance over the Traditional Mode group in all assessed categories. This consistent trend across various scoring types and statistical measures strongly suggests that the methodologies or practices employed in the New Mode group are more effective. It warrants further investigation into what specific elements contribute to this higher level of performance. Whether it's teaching methods, student engagement, or curriculum design, the data indicates that adopting the strategies from the New Mode could lead to improved outcomes in broader educational settings.

## Acknowledgements

This work was financially supported by the Jiangxi Province Science Foundation for Youths

(20224BAB216112), the Science and Technology Research Foundation of Jiangxi Education Department (GJJ21113), the Ph.D. Startup Foundation of Jiangxi Science and Technology Normal University (2021BSQD25), the Open Foundation of Jiangxi Provincial Key Laboratory of Drug Design and Evaluation (JKLDE-KF-2203) and the Undergraduate Research Foundation of Jiangxi Science and Technology Normal University (20221604115).

## References

- [1] Chan Luo, Huan Wu. Optimization and Information System Design of Undergraduate Primary Education Major Curriculum System Based on Big Data. *International Journal of Educational Curriculum Management and Research* (2021), Vol. 2, Issue 4: 8-16.
- [2] Wang W. Construction and Evaluation Method of Key Indicators of Moral Character and Political Concept Education of Undergraduate Pupils Based on CIPP Model[J]. *Wireless Communications and Mobile Computing*, 2022, 2022: 5653694.
- [3] Sun, P. H., & Lee, S. Y. (2020). The importance and challenges of outcome-based education – a case study in a private higher education institution. *Malaysian Journal of Learning and Instruction*, 17(2), 253-278.
- [4] Liu W, Pan Z. Construction and Application of Automatic Attendance Prediction System for Classroom Education Teaching Based on Random Matrix Theory[J]. *Mathematical Problems in Engineering*, 2022, 2022: 6888526.
- [5] Deng W, Jiang B. Improving the Effect of English Classroom Teaching Based on the Real-Time Supervision of College Students[J]. *Advances in Multimedia*, 2022, 2022: 6712279.
- [6] Chi Z, Yanling Z. Research on Applied Undergraduate Education Based on Flipping Classroom 2.0[C]// *Research on Applied Undergraduate Education Based on Flipping Classroom 2.0. Proceedings of the 2021 2nd International Conference on Modern Education Management, Innovation and Entrepreneurship and Social Science (MEMIESS 2021)*, 2021/07/29. Atlantis Press: 256-261.
- [7] Elliott-Dorans L R. To ban or not to ban? The effect of permissive versus restrictive laptop policies on student outcomes and teaching evaluations[J]. *Computers & Education*, 2018, 126: 183-200.
- [8] Chen L L, Wang X D, Li J C, et al. Promoting Students' Engagement? Flipped Classroom Matters a Lot - An Empirical Research in College[C]// *Promoting Students' Engagement? Flipped Classroom Matters a Lot - An Empirical Research in College. 9th International Conference on Blended Learning (ICBL)*, Jul 19-21, CITY UNIV HONG KONG C I H E H K S M, IMAGE COMP H K P H E F, PEKING U, Peking Univ, Beijing, PEOPLES R CHINA. 2016,9757: 196-206.
- [9] Patrick Y, Lee A, Raha O, et al. Effects of sleep deprivation on cognitive and physical performance in university students[J]. *Sleep and Biological Rhythms*, 2017, 15(3): 217-225.
- [10] Liu C-Y, Huang W-L, Kao W-C, et al. Influence of Disruptive Behavior Disorders on Academic Performance and School Functions of Youths with Attention-Deficit/Hyperactivity Disorder[J]. *Child Psychiatry & Human Development*, 2017, 48(6): 870-880.
- [11] Määttä, S., Hannula-Sormunen, M., Halme, H., & McMullen, J. (2022). Guiding Students' Attention Towards Multiplicative Relations Around Them: A Classroom Intervention. *Journal of Numerical Cognition*, 8(1), 36-52.
- [12] Qiu F. Reviewing the role of positive classroom climate in improving English as a foreign language students' social interactions in the online classroom[J]. *Frontiers in Psychology*, 2022, 13.
- [13] Yuan Q, Chen B, Pengsheng W J S W C. Contributing factors of classroom teaching quality and improving strategies in Chinese universities: From Students' Perspective[J]. 2021, 99: 01010.