

## Research on the Impact of Spatial Layout Design on College Students' Learning and Mental Health: Analysis Based on a Smart Classroom Renovation Project in Shanghai, China

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**Abstract :** Concern for students' mental health and the application of intelligent advanced technologies are driving changes in teaching models. The traditional teacher-centered classroom is beginning to transform into a student-centered smart interactive learning environment. Nowadays, smart classrooms are compatible with constructivist learning. This theory emphasizes the role of teachers in the teaching process as helpers and facilitators of knowledge construction, and students learn by interacting with them. The spatial design of classrooms is closely related to the teaching model and should also be developed in the direction of smart classroom design. The goal is to explore the impact of smart classroom layout on student-centered teaching environment and teacher-student interaction under the guidance of constructivist learning theory, by combining the design process and feedback analysis of the smart transformation project on the campus of Tongji University in Shanghai. During the research process, the theoretical basis of constructivist learning was consolidated through literature research and case analysis. The integration and visual field analysis of the traditional and transformed indoor floor plans were conducted using space syntax tools. Finally, questionnaire surveys and interviews were used to collect data. The main conclusions are as followed: flexible spatial layouts can promote students' learning effects and mental health; the interactivity of smart classroom layouts is different and needs to be combined with different teaching models; the public areas of teaching buildings can also improve the interactive learning atmosphere by adding discussion space. This article provides a data-based research basis for improving students' learning effects and mental health, and provides a reference for future smart classroom design.

**Keywords :** spatial layout, smart classroom, space syntax, renovation, educational environment

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