



# Impact of Modern Educational Technology on Students' Performance and Perceptions Based on 'Wisdom classroom'

Rongwei Cui<sup>1,2,a</sup>, Nino Felix<sup>1,b</sup>, Fang Zou<sup>2,c</sup>, Fang Liu<sup>2,d</sup>, Yi Han<sup>2,d</sup>

<sup>1</sup>University of the Cordilleras, Baguio, Philippines

<sup>2</sup>Weifang Vocational College, Weifang, China

<sup>a</sup>993500872@qq.com; <sup>b</sup>nrfelix@uc-bcf.edu.ph

<sup>c</sup>79215939@qq.com; <sup>d</sup>27255116@qq.com

<sup>e</sup>Hanyi0826@163.com

**Abstract.** The integration of modern educational technology into higher education is on the rise, providing students with an array of learning resources and opportunities. This study explores the utilization of the 'Wisdom classroom' as a contemporary educational technology by students in the field of chemical engineering and assesses its impact on their academic performance. Through online surveys and an analysis of academic performance data, this research investigates students' perceptions of the 'Wisdom classroom' and its potential correlation with their academic success. The findings reveal that students highly value the 'Wisdom classroom' for its learning resources and convenience, and a positive correlation with academic performance is evident. This study contributes to a deeper understanding of the potential of modern educational technology in the education of chemical engineering students.

**Keywords:** Modern educational technology, Students' performance, Students' perceptions, 'Wisdom classroom'

## 1 Introduction

With the rapid development of information and communication technology, modern educational technology has become a key driving force in the field of higher education [1]. Technology tools such as online learning platforms, educational applications and virtual learning environments provide students with more learning resources and ways to access educational content anywhere and at any time. This flexibility and convenience helps improve students' academic performance and provides opportunities for personalized learning [2].

Among them, 'Wisdom classroom' as a modern education technology, has been widely used in the field of education. It is an integrated online learning platform and

resource sharing platform that provides students and educators with a variety of educational resources, including online courses, electronic textbooks, academic papers and multimedia teaching tools.

Chemical engineering has always been an important field in college education, and its subject content is extensive and complex. Therefore, how to improve the academic performance of chemical students has always been a challenge in the field of education. The rise of modern educational technology has provided chemical students with new learning pathways and tools that are expected to play a positive role in improving their academic performance.

However, despite the gradual increase in the application of modern educational technology in higher education, there are still many unknown factors regarding the impact of specific technologies such as 'Wisdom classroom' on chemical students. This study aims to fill this gap by exploring, through surveys and data analysis, how chemical students perceive the 'Wisdom classroom' and whether this technology has an impact on their academic performance. This will help to improve the understanding of educators and education decision makers on the application and potential of educational technology, and provide a strong reference for future education reform. Specifically, we will focus on the following areas:

1. The use and views of chemical students on 'Wisdom classroom'.
2. The impact of 'Wisdom classroom' on students' academic performance.
3. Students' needs and expectations for educational technology.

## **2 Research Methods**

This research adopts a mixed-methods approach, combining the collection and analysis of both quantitative and qualitative data. The research methodology comprises the following elements:

### **2.1 Participants**

A total of 68 students from a university's chemical engineering program participated in this study, representing various academic levels and backgrounds.

### **2.2 Quantitative Data Collection**

Quantitative data were gathered through an online survey to assess students' perceptions and usage of the 'Wisdom classroom'. The survey included questions about the frequency of platform usage, content satisfaction, and academic performance.

### **2.3 Qualitative Data Collection**

A series of semi-structured interviews were conducted to gain in-depth insights into students' perceptions of the 'Wisdom classroom'. And students' needs and expectations for educational technology also been covered.

## 2.4 Data analysis

We used SPSS software to conduct descriptive statistics and regression analysis of quantitative data to determine the relationship between the use of "vocational education cloud" and academic performance. At the same time, we conducted a thematic analysis of qualitative data to understand students' perspectives and experiences.

## 3 Results and Discussion\*\*

### 3.1 Frequency of students' use of 'Wisdom classroom'

In this study, we first investigated the frequency of students' use of 'Wisdom classroom'. The results are shown in Table 1. The 'Wisdom classroom' is utilized by a majority of the surveyed students, with 73% using it several times a week. A significant portion of the surveyed students, specifically 21%, access the 'Wisdom classroom' occasionally on a weekly basis. Only 5% students rarely used the 'Wisdom classroom'. In summary, a majority of students exhibit a notable level of engagement with the 'Wisdom classroom', underscoring the platform's significance in the context of educational digitalization. However, some students use it less frequently, which may require further research to understand their needs and how the platform can be improved to meet the needs of different students.

**Table 1.** Frequency of students using the 'Wisdom classroom' per week

No	Answer to questions	Total number of students	Percentage
1	Yes	50	73
2	Sometimes	14	21
3	Not all	4	6

### 3.2 Students' satisfaction with 'Wisdom classroom'

In addition, we also conducted a detailed survey on students' satisfaction with the content of the 'Wisdom classroom' platform. The results of Table 2 show that students' satisfaction of this online learning platform is very high. 85% of the students were satisfied or very satisfied with the content of the 'Wisdom classroom' platform. 10% of students are neutral about the platform. Only 5% of the students surveyed said they were dissatisfied. The results show that the platform has achieved some success in delivering educational resources and content, but also highlight the need for continuous improvement to meet the needs and expectations of diverse students.

**Table 2.** Satisfaction of students using the 'Wisdom classroom'

No	Answer to questions	Total number of students	Percentage
1	Satisfied or very satisfied	58	85
2	neutrality	7	10
3	Dissatisfied	3	5

### 3.3 Impact of 'Wisdom classroom' on academic performance

Quantitative data were analyzed using SPSS software to explore the relationship between frequency of use, satisfaction and academic performance of the 'Wisdom classroom'.

Regression analysis showed that there was a positive correlation between the frequency of students using 'Wisdom classroom' and their academic performance ( $\beta = 0.45, p < 0.01$ ). In addition, there was a positive correlation between students' satisfaction with content on the platform and their academic performance ( $\beta = 0.32, p < 0.05$ ). These results suggest a degree of correlation between active use of the 'Wisdom classroom' and academic performance.

The questionnaire also included questions related to academic performance, such as "Do you think using the 'Wisdom classroom' has an impact on your academic performance?" 60% of the students believe that using the 'Wisdom classroom' has a positive impact on their academic performance. This is consistent with some research findings, suggesting that online learning platforms can provide additional learning resources and opportunities to help students better understand course content, leading to improved academic performance [3].

25% of students surveyed reported no significant impact, which may reflect some students' uncertainty about the relationship between academic performance and how online learning platforms are used. For these students, further research may be needed to understand their experiences and perspectives.

15% students think the use of the 'Wisdom classroom' had a negative impact on their academic performance. The result need attention, because the application of educational technology should be aimed at improving the academic performance of students. This may indicate that some students are experiencing challenges when using the platform, such as the digital divide or lack of effective support measures [4]. Educational institutions may need to provide more support and training to ensure that all students can benefit from online learning platforms.

### 3.4 Students' Views and usage of 'Wisdom classroom'

Students' perceptions of the 'Wisdom classroom' and students' needs and expectations were investigated by semi-structured interviews. In order to ensure the privacy of the interview results, the students were named by numerical code.

Student 1 think the 'Wisdom classroom' is really convenient. He said, "Whenever I need to review course material or prepare an assignment, I just open the app and have access to everything. It is no longer necessary to carry a lot of textbooks and I can review them whenever I want. The views of Student 1 indicate the importance of the 'Wisdom classroom' in providing a convenient learning experience. Online learning platforms provide a more flexible and convenient way to learn. Students can learn independently according to their own schedule and learning speed, without the restrictions of a traditional classroom. This flexibility of self-directed learning can improve student satisfaction [5].

Student 2 said, "I like the online discussion function of the 'Wisdom classroom' best. I can easily communicate with classmates and teachers, share my ideas and ask questions. This interaction really enhances my learning experience." Student 2's views highlight the importance of the online discussion function. Interaction and collaboration with fellow students and faculty is essential to facilitate academic interaction and knowledge sharing. It also shows that the 'Wisdom classroom', as an educational technology platform, is not just about providing learning resources, but also provides opportunities for socializing and collaboration, and this interaction and engagement helps students engage more deeply in academic activities [6].

Student 3 mentioned: "The learning analysis tool of 'Wisdom classroom' is very helpful to me. I can track my learning progress, understand my weaknesses, and take timely steps to improve. This allows me to tackle exams and assignments with more confidence." Student 3's views highlight the benefits of learning analytical tools. They highlighted the tool's support for personalized learning, helping them identify and improve their academic performance. This reflects the potential of modern educational technology to provide personalised learning support to help students better understand and respond to academic challenges [7].

In addition, the majority of students (30 out of 40) expressed some needs and expectations for educational technology, including more online learning resources and a more personalized learning experience. With the popularization of the Internet and the development of digital technology, educational technology is playing an increasingly important role in the field of education. Student life is full of digital devices and online resources, which makes it easier for them to accept and expect the application of educational technology [4].

## 4 Conclusion

This research reveals that chemical engineering students harbor positive perceptions of the 'Wisdom classroom' and identifies its affirmative influence on their academic performance. These insights offer valuable guidance for educational institutions and developers of educational technology to advance and promote modern educational technology, thereby enhancing the quality of education. Furthermore, students' requirements and anticipations regarding educational technology serve as crucial pointers for future research and development in the educational technology domain.

## 5 Research Limitations and Recommendations

While this study unveils a positive association between the 'Wisdom classroom' and academic performance, there exist other factors influencing academic achievement that warrant further investigation. Subsequent research can delve into the varied needs of students for different types of online learning resources and explore methods to further enhance modern educational technology to cater to these requirements.

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## REFERENCES

1. Pinto M, Leite C. Digital technologies in support of students learning in Higher Education: literature review [J]. *Digital Education Review*, 2020(37):343-360. <https://doi.org/10.1344/der.2020.37.343-360>
2. Jurāne-Brēmāne, Anžela. 2023. Digital Assessment in Technology-Enriched Education: Thematic Review. *Education Sciences* 13, no. 5: 522. <https://doi.org/10.3390/educsci13050522>
3. Means B, Toyama Y, Murphy R, et al. The Effectiveness of Online and Blended Learning: A Meta-Analysis of the Empirical Literature[J]. *Teachers College Record*, 2013, 115(3). <https://doi.org/10.1080/10888438.2011.624566>.
4. Allen, I. E., & Seaman, J. (2017). *Digital Compass Learning: Distance Education Enrollment Report 2017*. Babson Survey Research Group. <https://files.eric.ed.gov/fulltext/ED580868.pdf>
5. Kuo Y C, Walker A E, Schroder K E E, et al. Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses[J]. *Internet & Higher Education*, 2014, 20(jan.):35-50. <https://doi.org/10.1016/j.iheduc.2013.10.001>.
6. Dennen V P. Pedagogical lurking: Student engagement in non-posting discussion behavior. *Computers in Human Behavior*, 24(4), 1624-1633[J]. *Computers in Human Behavior*, 2008, 24(4):1624-1633. <https://doi.org/10.1016/j.chb.2007.06.003>.
7. Picciano A G. Theories and Frameworks for Online Education: Seeking an Integrated Model[J]. *Online Learning*, 2017, 21(3). <https://doi.org/10.24059/olj.v21i3.1225>.

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