



The Influence of Learning Management System Platform on Learners' Performance in Suzhou Early Childhood Education College of China

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Abstract: The purpose of this study is to explore the impact of learning management system (LMS) platform on learners' performance in Suzhou Early Childhood Education College. The interactive activities of the learning management system platform are taken as independent variables and learner performance as dependent variables. This study adopts quantitative research method and collects data through questionnaire survey to evaluate the specific impact of different interactive activities on learners' achievement. The results show that the interaction between learners and the system has a significant impact on the performance of learners, and the interaction between learners and teachers has a significant impact on the performance of learners, while the interaction between learners has no significant impact on the performance of learners. In addition, the study also found that learners of different ages and grades, as well as the nature of learning courses, have different interactive needs and preferences for learning management system platforms, which suggests that educators should consider individual differences when designing and implementing learning management systems. The conclusion of this study has important practical significance for optimizing the design of learning management system platform and improving the learning effect of learners. At the same time, it also provides data support and theoretical reference for future research in related fields.

Keywords: Learning Management System Platform, Learners' Performance, Quantitative Research Method, Suzhou Early Childhood, Education College

INTRODUCTION

Information and Communication Technology (ICT) is not just significant but also indispensable for national development. It has dramatically transformed our daily routines and has been instrumental in the rise of digital societies where connectivity and data exchange are the norm (Bieser & Hilty, 2018). Within the realm of education, the Learning Management System (LMS) stands out as an innovative application of ICT. It revolutionizes teaching by providing a centralized hub for online learning that

encompasses virtual classrooms, digital course materials, and sophisticated assessment tools. By streamlining educational processes and broadening access, LMS has become a cornerstone in enhancing educational efficiency and inclusivity, catering to a variety of learning styles. Suzhou Early Childhood Education College is a prime example of an institution that has embraced this technological wave by actively integrating LMS to elevate the quality of teaching and boost student learning outcomes, with the ambition of becoming a pacesetter in educational innovation (Shen et al., 2019; Wang et al., 2022).

The ascent of internet-based education marks a pivotal shift, with ICT advancements and substantial investments in online courses by leading universities propelling this change. This movement is steering education towards a blended approach, melding traditional classroom learning with online components, which has been shown through research to increase student satisfaction over singular educational formats (Dakhi et al., 2020). However, the traditional lecture model often falls short in fostering interaction and customization, resulting in a passive learning scenario where students tend to absorb rather than actively engage with the content. The imperative of educational informatization compels institutions to innovate and adopt ICT management systems that elevate the quality of grassroots education (Oladejo et al., 2023; Wang et al., 2022). Suzhou Early Childhood Education College has taken a significant step in this direction by implementing an LMS that digitizes teaching resources and establishes interconnected teaching processes, with the lofty goal of transforming traditional teaching models and providing learners with a more adaptive and personalized educational journey. Nonetheless, evaluating the LMS's efficacy, especially its capacity to enhance learner performance, requires meticulous research and empirical validation to ensure its optimization (Oladejo et al., 2023).

Learners' performance serves as a critical barometer for the overall effectiveness of an educational system, exerting a profound influence on individual student outcomes and the system's quality at large. Performance measurement and analysis provide educators with invaluable insights into students' comprehension, skills, and areas for development. This data is instrumental in allowing educators to align their teaching strategies with the diverse needs of learners, thereby enriching the educational experience and elevating the quality of education. Regular assessments are essential for pinpointing strengths and weaknesses, guiding the development of targeted interventions that nurture learners' performance growth (Black & Wiliam, 1998). Moreover, timely and constructive feedback,

a cornerstone of this process, not only motivates learners but also empowers them to take charge of their learning journey, leading to enhanced educational outcomes (Hattie & Timperley, 2007; Wiggins, 2006). At Suzhou Early Childhood Education College, the focus on performance is particularly pronounced, as it directly influences students' career trajectories and the education industry's standards, underscoring the importance of studying the LMS's impact on performance. Such research is vital for fine-tuning educational strategies and elevating the quality of education, with the potential to shape how LMS is harnessed to enrich teaching and learning experiences (Nguyen, 2024).

This study delves into the LMS platform at Suzhou Early Childhood Education College with the aim of evaluating its impact on student performance through empirical research and comprehensive questionnaires. The objective is to provide a nuanced assessment of the platform's utilization and its influence on student outcomes, identifying areas where the LMS excels and pinpointing opportunities for enhancement. By doing so, the research aspires to offer actionable insights that can inform strategic educational decisions and bolster the integration of digital technologies within educational frameworks, contributing to the broader advancement of educational informatization.

LITERATURE REVIEW

Research shows LMS can boost student achievement, depending on implementation and engagement (Oguguo et al., 2021). Effective LMS use requires strategic planning and data utilization to enhance learning and motivation (Pesovski et al., 2022). To maximize benefits, LMS must be integrated and refined continuously. ICT is revolutionizing education, making it more effective and engaging. It includes various communication devices and applications that support student learning and develop educational environments. "China Education Modernization 2035" emphasizes ICT's role in educational reform, promoting a blend of large-scale and personalized learning (Yan & Yang, 2021). LMS, as highlighted by Al-Nuaimi and Al-Emran (2021), enhance the learning process through online environments, fostering collaboration and professional development.

LMS platforms are critical for interactive and engaging educational experiences, supporting various elements essential for student engagement and learning outcomes (Namada, 2021). They integrate tools like discussion forums and collaborative workspace, enhancing active learning and creating immersive environments. Personalized learning is

facilitated through adaptive technologies, with features like quizzes providing immediate feedback and tailored experiences (McLoughlin & Lee, 2011). The effectiveness of these tools depends on their integration into course design and learner participation (Means et al., 2014). LMS design and interactivity, such as intuitive navigation and effective use of resources, play a crucial role in shaping student engagement and academic performance (Venugopal and Jain, 2015). Effective teacher-student communication via LMS impacts student learning experiences, emphasizing the need for timely feedback and supportive interactions (Boettcher and Conrad, 2021).

Learners' performance is a critical indicator of educational effectiveness and has been the subject of extensive research. "Learners' Performance" does not refer to academic achievement based on summative tests in the traditional sense.

Because the learners on the learning management system platform can not always complete the course and finally get grades, but more learners carry out learning based on learning interests and solving practical problems, so the "student academic performance" studied in this paper can be regarded as the "learning effect" in a certain period of time, including short-term and long-term learning effects (Albreiki et al., 2021). The quality dimension of learners' performance is fundamentally concerned with cognitive skills and knowledge acquisition. Behavioral engagement in learning, such as class participation and assignment completion, is linked to better academic outcomes. Effective LMS features can increase student engagement and performance. Self-regulated learning strategies, like goal setting, are essential for success (Zimmerman, 2002). Intrinsic motivation, driven by personal interest, is associated with deeper engagement and better outcomes compared to extrinsic motivation (Ryan and Deci, 2000). Long-term academic success is influenced by sustained engagement and the development of cognitive and non-cognitive skills (Fredricks et al., 2004). LMS platforms support long-term educational success by facilitating ongoing academic achievements and skill development. Lifelong learning and adaptability are crucial for long-term success, with self-discipline and grit playing a significant role in achieving long-term goals (Duckworth and Seligman, 2005).

LMS platforms are vital in modern education, offering functionalities like course management and analytics that impact learner performance. Interactive LMS features enhance engagement and outcomes (Furqon et al., 2023). Analytics in LMS improve performance by identifying at-risk students and providing support (Al-Sulami et al., 2023).

Research Objectives

This study investigates the impact of the Learning Management System (LMS) platform on learners' performance in Suzhou Early Childhood Education College: (1) To study the influence of learning management system platform on learners' performance in Suzhou Early Childhood Education College of China. (2) to examine the influence of learning management system platform on learners' performance in Suzhou Early Childhood Education College of China and (3) to study the relationship between learning management system platform and learners' performance.

Conceptual Framework and Hypothesis

This study will be conducted from two aspects of learning management system and student learning achievement. The interactive activities of the learning management system platform include the interaction between learners, the interaction between learners and the system, the interaction between learners and teachers, in order to improve learners' learning performance. Learning achievement can be described from three dimensions: quality dimension, behavior dimension and long-term dimension. The interactive learning activities of the learning management system platform may directly affect the academic performance of learners, or indirectly affect the academic performance of learners. This study hopes to reveal the specific impact mechanism of the learning management system platform on learners' performance in Suzhou Early Childhood Education College through quantitative research methods, and provide empirical data support for educational administrators and teachers to optimize teaching strategies and improve education quality. This paper studies and builds the following research model, as shown in the figure 1.

Hypothesis Statement

The LMS platform enhances resource sharing and problem-solving, fostering knowledge creation and improving learning effectiveness. It integrates learners, educators, and resources, enabling multi-dimensional interactions like peer-to-peer, learner-educator, and learner-platform. Research shows these interactions boost engagement and performance. Effective communication between learners and teachers, facilitated by the platform's tools, is vital for learning. The platform's design influences learners' online engagement and outcomes. The study suggests that well-crafted LMS interactions positively affect academic performance.

H1: The interaction between learners based on the learning management system platform positively affects learners' performance.

H2: The interaction between learners and the system based on the learning management system platform positively affects learners’ performance.

H3: The interaction between learners and teachers based on the learning management system platform positively affects learners’ performance.

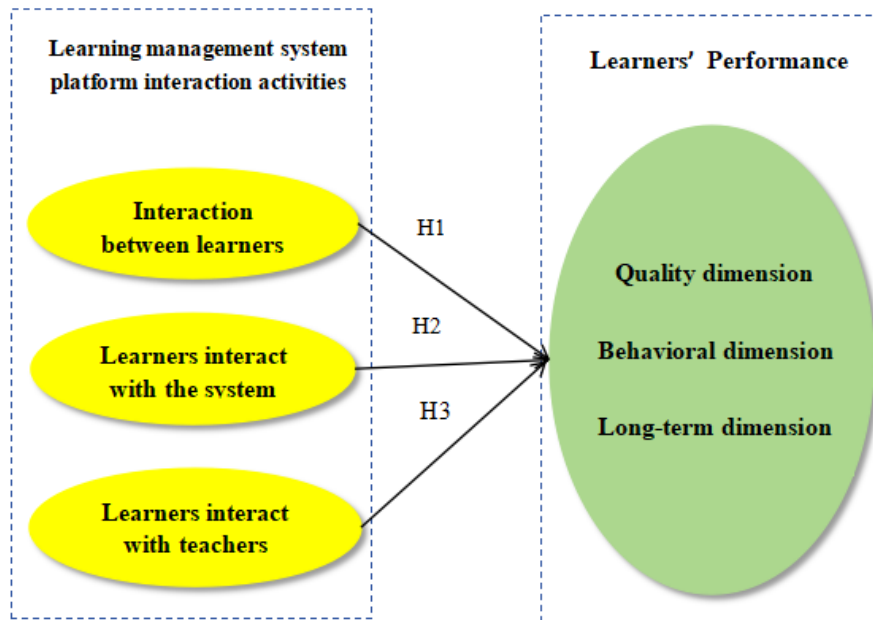


Figure 1. Research Model

METHOD

In this study, a comprehensive examination of the interactions facilitated by the Learning Management System (LMS) platform is conducted to develop a deeper understanding of its theoretical framework and associated variables. This investigation delves into how different types of interactions such as those between learners, between learners and the system, and between learners and teachers affect the learning process and outcomes.

To explore and analyze the issues of concern, this study employs quantitative research methods. Quantitative research is characterized by its reliance on numerical data to generate insights and draw conclusions. For the purpose of this study, structured questionnaire survey will be used as the main data collection tool. Such questionnaire design can provide a standardized question format, making the data collection process comparable and consistent. This study will obtain data by distributing questionnaires among the target group and encouraging participants to answer the questions honestly.

Population and Sample

The target population of this study is students from Suzhou Early Childhood Education College, with a total of 2412 students in three grades. The sample size of the students is calculated according to Krejcie and Morgan’s formula (1967). Through the Krejcie and Morgan calculation method, it is calculated that the sample size of this paper is 331 students in three grades.

Obtain the research instrument is questionnaires. The research method of this study is quantitative research, and a descriptive study is carried out on the interaction of the learning management system platform among the three grade students in Suzhou Early Childhood Education College. The creation and development of research tools includes the collection of demographic data, data analysis, and statistics used in the research as follows.

A total of 331 students from three grades of Suzhou Early Childhood Education College were randomly selected in this study. We will publish questionnaires and collect data. The number of students in the three grades is 763 in the first grade, 852 in the second grade, and 797 in the third grade. 104, 116, 111 people were randomly selected from the three grades, and questionnaires were sent to the target group.

Operationalization of Model Theory Components

In order to empirically test the proper situation of the research hypothesis, it is necessary to operationalize the theoretical components of the research model. Since the theoretical factors in the research model can not be measured directly, it is necessary to determine measurable indicators for each theoretical component, so as to achieve the measurement of latent variables. The processing of model component operationalization is shown in the table 1.

Table 1. Operationalization of Model Theory Component

Category	Theoretical Construction	Measurement Item
Learning Management System Platform Interaction Activities	The interaction between learners	You are willing to exchange questions with other learners
		You are willing to share knowledge with other learners
		You are willing to collaborate with others to solve certain problems
		You are willing to actively participate in the learning forums or discussion boards set up on the platform
		Your discussion with other learners helps to deepen your understanding of the course content

	The interaction between learners and the system	You are willing to use the system as a medium to complete learning activities
		You can receive all kinds of learning feedback on the system
		You are willing to use the system to complete all learning sessions
		You are willing to regularly use additional learning resources on the platform (such as electronic books, video lectures, etc.) to assist your learning
		You are willing to accept the learning progress tracking and reminder functions provided on the platform
	The interaction between learners and teachers	You are willing to discuss problems with the instructor
		You are willing to complete the learning tasks assigned by the instructor
		You are willing to give constructive suggestions to the instructor
		You feel that the speed of the teacher's response to the questions on the platform meets your expectations
		You feel that the teachers on the platform can effectively help you solve your learning difficulties
Learners' Performance	Studied from the quality dimension	Platform-based learning complements your existing knowledge structure
		Platform based learning improves your professional ability and quality
		Platform-based learning helps you develop critical thinking skills
		Platform-based learning improves your ability to learn and explore independently
	Behavior dimension	You can complete the selected courses on the platform efficiently and on schedule
		You can get good learning results through platform learning
		You can adapt to the online learning environment
		You can adjust your learning strategies or methods based on feedback from the platform
		You can adjust your learning strategies or methods based on feedback from the platform
	Long-term nature of students dimension	Learning through the platform is very useful for your future development
		Learning through the platform helps you achieve your future goals
		Learning through the platform increases your confidence in your future career development
		Learning experiences through the platform have a long-term positive impact on your academic achievement and career

Questionnaire Design

The focus of questionnaire design is to study the relationship and mechanism between interactive learning activities and learner performance on the learning management system platform. The purpose of the questionnaire survey is to provide the necessary research data for this study.

This research questionnaire consists of three parts: preface, body, and conclusion. The main part includes 28 attitude measurement items, five learner basic information variables, and three learning management system platforms use basic variables, including the following aspects:

1. The basic information of the learner, including gender, age, family residence, grade, and the nature and nature of the courses the learner takes on the learning management system platform;
2. The three interactions of learners on the learning management system platform are mainly measured by the willingness and evaluation of learners on the three interaction dimensions, which are measured by the five-point Likert scale.
3. Learner performance is measured through the long-term dimension, quality dimension and behavioral dimension of the learning management system platform after the end of the course, and the five-point Likert scale is also used for measurement. In this study, five-point Likert scale was used for measurement. 1 represents strongly disagree; 2 represents disagree; 3 represents uncertainty; 4 represents agree; 5 represents strongly agree.

RESULTS AND DISCUSSION

Data Analysis

Descriptive Analysis

A total of 331 people were surveyed in this questionnaire, including 37 boys, accounting for 11.2%, 293 girls, accounting for 88.5%, and one other person, accounting for 0.3%. In the age distribution, 19 years old accounted for the largest proportion, 158 people, accounting for 47.7%, followed by 20 years old, 133 people, accounting for 40.2%, 21 years old and 22 years old accounted for relatively small, respectively, 29 people (8.8%) and 11 people (3.3%). In the family living area, the number of rural people is 126, accounting for 38.1%, and the number of urban people is 205, accounting for 61.9%. In the grade distribution is more uniform, of which the number of first grade 104, accounting for 31.4%, the number of second grade 116, accounting for 35.0%, the number of third grade 111, accounting for 33.5%. In the nature of courses, 170 people are required courses, accounting for 51.4%, 127 people are optional courses, accounting for 38.4%, and 34 people are interested in courses, accounting for 10.3%.

Table 2. Reliability Analysis

Variable	Cronbach's Alpha	Item count
Interaction between learners	0.976	5
Learners interact with the system	0.973	5
Learners interact with teachers	0.979	5
Learner quality dimension	0.990	4
Learner behavior dimension	0.987	5
Learner long-term dimension	0.991	4
Totality	0.993	28

According to the above data, the reliability coefficient of each dimension and the overall questionnaire is greater than 0.9, which indicates that the reliability of each dimension and the overall questionnaire is very high. The questionnaire results are credible.

Table 3. Validity analysis

Variable	Item	KMO	Bartlett's Sphericity Test		
			Approximate chi-square	df	Sig.
Interaction between learners	L1	0.915	2560.107	10	<0.001
	L2				
	L3				
	L4				
	L5				
Learners interact with the system	S1	0.869	2717.215	10	<0.001
	S2				
	S3				
	S4				
	S5				
Learners interact with teachers	T1	0.902	2741.552	10	<0.001
	T2				
	T3				
	T4				
	T5				
Learner quality dimension	Q1	0.893	2756.525	6	<0.001
	Q2				
	Q3				

	Q4				
Learner dimension	behavior	0.920	3237.914	10	<0.001
	B1				
	B2				
	B3				
	B4				
B5					
Learner dimension	long-term	0.815	2990.973	6	<0.001
	L1				
	L2				
	L3				
	L4				
Totality		0.961	22040.954	378	<0.001

The results of KMO test showed that the KMO value of each dimension and the overall questionnaire was greater than 0.8. Meanwhile, the results of Bartlett sphericity test showed that the significance $P < 0.001$ was significant at the level, indicating that the validity of the questionnaire was high.

According to the above data, the questionnaire's reliability and validity are very good, and the results of the questionnaire analysis are effective and credible.

Table 4. Correlation Analysis

	Interaction between learners	Learners interact with the system	Learners interact with teachers	Learner quality dimension	Learner behavior dimension	Learner long-term dimension
Interaction between learners	1					
Learners interact with the system	.914**	1				
Learners interact with teachers	.861**	.931**	1			
Learner quality dimension	.799**	.872**	.908**	1		
Learner behavior dimension	.804**	.877**	.891**	.946**	1	
Learner long-term dimension	.799**	.864**	.885**	.942**	.967**	1

Based on the above correlation analysis results, we can see that there are highly significant positive correlations among learners' interaction, learners' interaction with the system, learners' interaction with teachers, learner's quality dimension, learner's behavior dimension and learner's long-term dimension, with p values less than 0.01 and correlation coefficients greater than 0.79.

Table 5. Difference Analysis

	Kolmogorov Smirnov			Shapiro. - Wilke		
	Statistics	df	Sig.	Statistics	df	Sig.
Interaction between learners	0.202	331	<.001	0.846	331	<.001
Learners interact with the system	0.206	331	<.001	0.852	331	<.001
Learners interact with teachers	0.208	331	<.001	0.845	331	<.001
Learner quality dimension	0.208	331	<.001	0.838	331	<.001
Learner behavior dimension	0.210	331	<.001	0.839	331	<.001
Learner long-term dimension	0.216	331	<.001	0.826	331	<.001

Through the normal distribution analysis, it was found that the sample size was 331, and the p values of Kolmogorov-Smirnoff were all less than 0.001, indicating that the samples did not conform to the normal distribution, and the difference analysis needed to use non-parametric test.

According to the Kruskal-Wallis H test data, there is no significant difference between gender in learning management system platform interaction and learner performance, and the P-values are all greater than 0.05, that is, boys and girls have similar levels in these six dimensions, and there is no significant gender difference. Age has significant differences in learning management system platform interaction and learner performance, with p values less than 0.05. The comparison of significance after adjustment by Bonferroni correction method shows that: In the dimensions of interaction between learners, interaction between learners and the system, learner quality, learner behavior and long-term recognition, 19-year-olds are significantly higher than 21-year-olds and 22-year-olds. In the dimensions of interaction between learners and teachers, 19-year-olds are significantly higher than 21-year-olds. There are significant differences between grades in learning management system platform interaction and learner performance, with p values

less than 0.05. Compared with the significance adjusted by Bonferroni correction method, it is found that in 6 dimensions, the recognition degree of grade one and grade two is significantly greater than that of grade three. There are significant differences in the nature of courses in the learning management system platform interaction, with p values less than 0.05, while there is no significant difference in learner performance, with p values greater than or equal to 0.05. The comparison of significance after adjustment by Bonferroni correction method shows that: In the three dimensions of learning management system platform interaction, the recognition degree of compulsory courses is significantly higher than that of elective courses.

According to the U-test data of Sherman and Whitney, there is no significant difference in the interaction of the learning management system platform and the performance of learners in the family residence, and the P-values are all greater than 0.05, that is, the levels of rural and urban areas in these six dimensions are similar, with no significant difference.

Regression analysis

Regression analysis of all dimensions of learner performance and learning management system platform interaction

Table 6. Regression Analysis

Model	B		Beta	t	Sig.	F	P	R2	Δ R 2
	B	SE	Beta						
(constant)	0.379	0.093		4.093	<.001	567.249	<.001 ^b	0.839	0.837
1 Interaction between learners	-0.009	0.052	-0.010	-0.176	0.861				
Learners interact with the system	0.290	0.075	0.295	3.852	<.001				
Learners interact with teachers	0.628	0.059	0.644	10.556	<.001				

a. Dependent variable: learner performance

As can be seen from the above table, the adjusted R square =0.837, indicating that the independent variable can explain 83.7% of the change of the dependent variable; meanwhile, the F value is 567.249, the significance is less than 0.001, indicating that the equation model is effective.

In terms of independent variables, the coefficient of learner-teacher interaction is 0.628, the T-statistic is 10.556, and the P-value is less than 0.001, indicating that the variable has a very significant impact on learner performance.

The coefficient of learner interaction with the system is 0.290, the T-statistic is 3.852, and the P-value is less than 0.001, indicating that this variable also has a significant impact on learner performance.

However, the coefficient of interaction between learners is -0.009, the T-statistic is -0.176, and the p-value is 0.861, indicating that this variable has no significant effect on learner performance.

The regression equation is as follows: learner performance = 0.628* Interaction between learner and teacher +0.290* Interaction between learner and system -0.009* Interaction between learners +0.379

Table 7. Interactive regression analysis of learner quality and learning management system platform

Model	B		Beta	t	Sig.	F	P	R ²	Δ R ²
	B	SE	Beta						
(constant)	0.360	0.096		3.728	<.001	533.888	<.001 ^b	0.830	0.829
Interaction between learners	-0.029	0.054	-0.031	-0.544	0.587				
Learners interact with the system	0.221	0.078	0.221	2.815	0.005				
Learners interact with teachers	0.722	0.062	0.729	11.660	<.001				

a. Dependent variable: learner quality

As can be seen from the above table, the adjusted R square =0.829, indicating that the independent variable can explain the change of 82.9% of the dependent variable; meanwhile, the F value is 533.888, the significance is less than 0.001, indicating that the equation model is effective.

In terms of independent variables, the coefficient of learner-teacher interaction is 0.722, the T-statistic is 11.660, and the P-value is less than 0.001, indicating that the variable has a very significant impact on learner quality.

The coefficient of learner interaction with the system is 0.221, the T-statistic is 2.815, and the P-value is less than 0.001, indicating that this variable also has a significant impact on learner performance.

However, the coefficient of interaction between learners is -0.029, the T-statistic is -0.544, and the p-value is 0.587, indicating that this variable has no significant effect on learner performance.

The regression equation is as follows: learner quality = 0.722* Interaction between learners and teachers +0.221* Interaction between learners and system -0.029* interaction between learners +0.360

Table 8. Interactive regression analysis of learner behavior and learning management system platform

Model		B		Beta	t	Sig.	F	P	R ²	Δ R ²
		B	SE	Beta						
1	(constant)	0.444	0.100		4.436	<.001	468.006	<.001 ^b	0.811	0.809
	Interaction between learners	-0.016	0.056	-0.018	-0.294	0.769				
	Learners interact with the system	0.358	0.081	0.365	4.404	<.001				
	Learners interact with teachers	0.552	0.064	0.567	8.587	<.001				

a. Dependent variable: learner behavior

As can be seen from the above table, the adjusted R square =0.809 indicates that the independent variable can explain the reason for the change of 80.9% of the dependent variable. Meanwhile, the F value is 468.006, and the significance is less than 0.001, indicating that the equation model is effective.

In terms of independent variables, the coefficient of learner-teacher interaction is 0.552, the t statistic is 8.587, and the p value is less than 0.001, indicating that the variable has a very significant impact on learner quality.

The coefficient of learner interaction with the system is 0.358, the T-statistic is 4.404, and the P-value is less than 0.001, indicating that this variable also has a significant impact on learner performance.

However, the coefficient of interaction between learners is -0.016, the T-statistic is -0.294, and the p-value is 0.769, indicating that this variable has no significant effect on learner performance.

The regression equation is as follows: learner behavior = 0.552* Interaction between learner and teacher +0.358* Interaction between learner and system -0.016* interaction between learners +0.444

Table 9. Regression analysis of learners' long-term interaction with learning management system platform

Model		B	Beta	t	Sig.	F	P	R ²	Δ R ²	
		B	SE	Beta						
	(constant)	0.334	0.108		3.092	0.002	425.239	<.001 ^b	0.796	0.794
	Interaction between learners	0.018	0.060	0.019	0.307	0.759				
1	Learners interact with the system	0.291	0.088	0.286	3.317	0.001				
	Learners interact with teachers	0.609	0.069	0.603	8.791	<.001				

a. Dependent variable: learners for a long time

It can be seen from the above table that the adjusted R square =0.794 indicates that the independent variable can explain 79.4% of the change of the dependent variable; meanwhile, the F value is 425.239, and the significance is less than 0.001, indicating that the equation model is effective.

In terms of independent variables, the coefficient of learner-teacher interaction is 0.609, the t statistic is 8.791, and the p value is less than 0.001, indicating that the variable has a very significant impact on learner quality.

The coefficient of learner interaction with the system is 0.291, the T-statistic is 3.317, and the p-value is 0.001, indicating that this variable also has a significant impact on learner performance.

However, the coefficient of interaction between learners is 0.018, the T-statistic is 0.307, and the p-value is 0.759, indicating that this variable has no significant effect on learner performance.

The regression equation is: learner long-term = 0.609* Interaction between learner and teacher +0.291* Interaction between learner and system +0.018* Interaction between learners +0.334

CONCLUSION

LMS Platform Interaction and Learner Performance Analysis, The study finds that most users have a positive view of LMS interactivity, and learner performance is highly rated, indicating the platform's role in fostering interaction and improving performance. H2 and H3 are supported, showing significant impacts of learner interactions, platform interactions, and teacher interactions on performance, with teacher interaction being particularly influential among Suzhou Early Childhood Education College students. Contrary to expectations, H1 is not supported, indicating no significant effect of peer interaction on performance. Possible reasons include insufficient awareness of the platform's value and off-topic discussions affecting learning. Comparison with Previous Studies, The study's results align with previous research in most aspects but notes a lack of exploration in platform interaction factors. It fills this gap, offering insights into factors affecting LMS impact on learner achievement in Suzhou Early Childhood Normal High School and similar institutions. The study concludes that platform and teacher interactions positively affect learner performance, but peer interaction does not. It suggests future research to explore other potential factors affecting LMS impact on performance and to enhance students' understanding of the platform's influence at Suzhou Early Childhood Education College.

The study analyzed factors affecting learner performance using various statistical methods. Majority of students are female (over 85%), with a peak age of 19, suggesting platform popularity among this demographic. Urban students slightly outnumber rural, possibly due to better internet access. Equal grade distribution indicates widespread online learning participation. Most students engage with required courses, likely due to frequent LMS use. Students recognize platform interactivity, especially with teachers, which may relate to teacher guidance. Positive evaluations of learner performance indicate the LMS enhances learning effectiveness. High questionnaire reliability and validity suggest robust research findings. Age differences in platform interaction and performance evaluations exist, with older students rating lower. Lower grade students rate platform interaction and performance higher, possibly due to novelty. Required course students rate platform

interaction higher, likely due to more frequent use. Strong positive correlation and significant impact of platform interaction on learner performance, especially teacher-learner interaction.

According to the above research conclusions, the following suggestions are given:

- 1)Enhance Interactivity: Optimize the platform for better teacher-student interaction with real-time feedback systems. Introduce interactive tools like online whiteboards and group tasks to boost engagement. Integrate social media for resource sharing and connect students beyond the platform. Provide teacher training on effective use of online teaching tools. Regularly collect student feedback to improve platform functions.
- 2)Address Grade-Specific Needs:Offer hierarchical teaching resources to cater to different student levels. Create customized study plans with compulsory and elective courses. Design grade-specific activities for peer networking and career development. Track learning progress with personalized reports for each student.
- 3)Personalized Learning Paths:Analyze learning data to provide tailored resources and suggestions.Develop adaptive algorithms to adjust content based on student progress. Offer one-to-one tutoring for additional student support. Provide career planning guidance and internship opportunities.
- 4)Incentivize Learner Interaction: Implement a group competition system to foster teamwork and engagement. Introduce reward points for active participation in discussions. Establish a peer assessment system to enhance critical thinking. Set up interactive leaderboards to recognize active students.
- 5)Regular Training:Conduct training sessions on new platform features and updates. Host best practice workshops with experienced users. Provide technical support to resolve user issues.
- 6)Continuous Tracking and Evaluation:Establish a user feedback system to gather insights on platform performance. Use performance monitoring tools to identify and address issues. Conduct regular satisfaction surveys to guide platform improvements. Release effect evaluation reports to demonstrate the platform's impact on learning.

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