A CORRELATIONAL STUDY OF LEARNING COMMUNITIES AND LEARNING ENGAGEMENT AMONG STUDENTS AT ZHENGZHOU X COLLEGE IN CHINA

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Abstract: This study aimed to explore the relationship between learning communities and learning engagement, and to analyze the differences in learning communities and learning engagement based on different demographic variables: gender, grade, position, and major. The research was conducted among college students from X Music College in Zhengzhou, China, using a questionnaire survey to carry out quantitative research on students' perceptions of learning communities and learning engagement. A total of 297 valid questionnaires were collected. The results showed that college students had a high perception of learning communities and learning engagement. Gender and grade did not significantly impact learning communities or learning engagement, while position and major showed significant differences: ordinary students reported significantly higher recognition of learning communities and engagement than class leaders; students majoring in vocal music and opera-musical theater scored higher on all dimensions of learning communities and learning engagement compared to students in other majors. Additionally, the study found that learning communities and their dimensions had significant positive correlations with learning engagement and its dimensions. These results indicated that the construction of learning communities played an important role in enhancing college students' engagement. The study concluded with reflections and discussions on the findings, providing recommendations for optimizing learning communities based on different roles and major characteristics. It also suggested further expanding the research scope and methods to more deeply explore the mechanisms through which learning communities influence student behavior and educational practice.

Keywords: Cognitive Learning Communities, Learning Engagement, University Students, Music Education

Introduction

Learning engagement was a multidimensional concept often described in terms of vigor, dedication, and absorption. Vigor referred to the energy and effort students invested in learning, dedication highlighted their enthusiasm and sense of meaning, and absorption reflected students' full immersion in learning activities (Schaufeli et al., 2002). These aspects contributed to a positive and enduring mental state that helped students sustain their effort despite challenges, leading to higher academic involvement and emotional well-being (Fredricks et al., 2004).

In recent years, learning communities had gained traction, especially in higher education, due to their ability to enhance academic engagement and student mental health. These communities fostered collaboration and provided emotional and academic support, leading to a sense of belonging and improved resilience in the face of academic pressures (Salanova et al., 2006). Research demonstrated that learning communities positively impacted student well-being and engagement across various fields, including medicine and teacher professional development (Tackett et al., 2018; Sullanmaa et al., 2022).

In China, the rapid growth of higher music education had led to an increased number of students pursuing music majors. However, these students faced unique challenges, such as high-performance expectations, frequent competitions, and societal pressures. Studies showed that learning engagement was closely tied to students' academic performance, emotional regulation, and self-efficacy, and that a supportive teaching environment played a crucial role in fostering engagement (Wang, 2018).

This study aimed to investigate the impact of learning-oriented communities on music major students' engagement in Zhengzhou's higher education institutions. Understanding how such communities influenced learning engagement could provide insights into the optimal design of educational systems and support mechanisms that enhanced student learning outcomes and overall academic experience.

Research Objectives

(1) To understand the demographic background information of students at Zhengzhou X Music College, including their gender, grade, position, and major.

(2) To understand the current level of perceived learning communities for students at Zhengzhou X Music College.

(3) To understand the current level of learning engagement for students at Zhengzhou X Music College.

(4) To analyze the differences in perceived learning communities among students at Zhengzhou X Music College under different demographic variables.

(5) To analyze the differences in learning engagement levels among students at Zhengzhou X Music College under different demographic variables.

(6) To investigate the relationship between perceived learning communities and learning

engagement among students at Zhengzhou X Music College.

Literature Review

The Concept and Definition of Learning Communities for College Students: Summary and Refinement

Learning communities, based on Senge's (1994) theory of learning organizations, focused on collaborative environments where individuals grew alongside the organization. This concept, originally applied to school administrative and teacher teams, was later extended to student communities, emphasizing informal, non-administrative structures that promoted collective learning. Traditional university instruction often relied on a "show and tell" model; however, learning communities aimed to address student isolation by fostering interaction and collaborative problem-solving. This model encouraged students to share knowledge, explore solutions, and cultivate a culture of learning (Senge, 1994). The present study explored how perceived learning communities influenced music students' engagement, particularly in institutions that integrated community-based learning.

Definition of Learning Engagement: Summary and Refinement

Learning engagement encompassed students' psychological, emotional, and behavioral involvement in the learning process. It reflected students' active participation, academic achievement, and mental well-being. Engagement was widely recognized as a multidimensional construct that included behavioral, emotional, and cognitive investments in learning (Chen, 2018). It served as a key indicator of both academic success and psychological health, with research suggesting that engagement correlated positively with motivation, self-efficacy, and learning outcomes (Kuh, 2001; Salanova et al., 2006). Engagement was often divided into individual and social dimensions—the former focused on personal motivation, while the latter emphasized collaboration and peer interaction (Li, 2010). Schaufeli et al. (2002) defined engagement in terms of vigor, dedication, and absorption, underscoring the emotional and behavioral aspects of student participation.

Dimensions and Measurement of Learning Engagement: Summary and Refinement

Learning engagement was commonly assessed across behavioral, emotional, cognitive, and social dimensions. Behavioral engagement referred to students' participation in activities, task completion, and involvement in classroom discussions (Tempelaar et al., 2020). Emotional engagement measured students' feelings toward learning, including enthusiasm, interest, and anxiety (Goldspink & Foster, 2013). Cognitive engagement involved critical thinking, problem-solving, and the depth of content mastery (Charland et al., 2015), while social engagement evaluated interactions with peers and participation in teamwork (Wu et al., 2023). Measurement tools included self-report surveys, such as the Utrecht Work Engagement Scale (UWES), which assessed vigor, dedication, and absorption (Song et al., 2019). More recent approaches integrated learning management system (LMS) analytics and computer vision technologies to track facial expressions and body language, providing more objective

insights into student engagement (Wu, 2020).

Relevant Studies on Learning Communities and Learning Engagement: Summary and Refinement

Learning engagement was influenced by both individual factors, such as motivation and self-efficacy, and environmental factors, such as teaching quality and peer support (Feng, 2024). Studies demonstrated that learning communities positively affected student engagement by offering supportive networks and enhancing intrinsic motivation (Chen, 2024). Research also emphasized the role of social media in fostering interaction and engagement, particularly when used under appropriate guidance (Koranteng et al., 2019). In China, gender differences in learning engagement were observed, with female students generally showing higher engagement levels (Liao, 2011). Urban students were typically more engaged than their rural counterparts, likely due to increased access to academic resources (Hang, 2014). Internationally, demographic variables such as age and socio-economic status also influenced engagement; older and more socio-economically advantaged students tended to report higher engagement (Ahern & Norris, 2011; Carini et al., 2006).

In music education, intrinsic motivation played a central role in engagement, as students' passion for music led to greater participation (Schmidt & Dickson, 2017). Teaching methods that promoted active participation and provided constructive feedback were found to significantly enhance engagement (MacIntyre & Parry, 2016; Hallam, 2015). Overall, engagement in music education was influenced by a combination of motivational factors, teaching strategies, classroom management, and the learning environment.

Methodology

This study was conducted at Zhengzhou X Music College in Henan Province, a regional educational hub in central China. The college had 1,495 students in 2024, with a diverse student population. The study focused on students majoring in music, a growing discipline supported by physical and virtual learning communities designed to enhance collaboration and motivation.

A total of 306 students were surveyed through convenience sampling via an online platform, with 297 valid responses (97% response rate). The online survey method was chosen for its efficiency and reach. The questionnaire was adapted from established instruments: the "Learning Community Scale" (Lan et al., 2018) and the "Learning Engagement Scale" (Fu, 2020), both widely validated in Chinese educational research. The questionnaire consisted of two parts: demographic information (gender, grade, position, and major), and items measuring learning communities (educational, cognitive, and social presence) and learning engagement (vigor, dedication, and absorption), using a five-point Likert scale.

Reliability, assessed via Cronbach's alpha, exceeded 0.7 for all scales, indicating high internal consistency. Construct validity was confirmed through factor analysis, with a KMO value of 0.957 and

a significant Bartlett's test ($p < 0.05$). The extracted three factors from each scale explained over 69% of the variance.

Data were analyzed using SPSS 23.0. Descriptive statistics described participant characteristics and overall learning engagement. Independent samples t-tests and one-way ANOVA were used to test demographic differences, while Pearson correlation was employed to assess the relationship between perceived learning communities and learning engagement.

Results

Demographic Analysis of Questionnaire Participants

A total of 306 online questionnaires were distributed, and 297 valid responses were analyzed. Demographic data from students at Zhengzhou X Music College were collected to address the first research question concerning gender, grade, position, and major. The gender distribution was balanced, with 151 male students (50.8%) and 146 female students (49.2%). Grade distribution showed 22.9% freshmen, 22.9% sophomores, 22.6% juniors, and 31.6% seniors, with seniors comprising the largest group. Regarding student positions, 19.2% served as class leaders, while 80.8% were non-class leaders. In terms of majors, Vocal Music (33.0%) and Opera and Musical Theater (29.3%) represented the largest groups. Smaller proportions of students majored in Instrumental Music (8.8%), Music Theory (11.1%), Choral Conducting (9.8%), and Computer Music Production (8.1%).

Descriptive Analysis of Learning Communities and Learning Engagement

Statistical analysis of learning community and engagement among students at X Music College was conducted using SPSS 26.0. Table 1 showed that both learning community ($M = 4.02$, $SD = 0.98$) and learning engagement ($M = 4.02$, $SD = 0.98$) were rated highly. Within the learning community, educational presence ($M = 4.06$), cognitive presence ($M = 3.98$), and social presence ($M = 4.02$) showed similarly high scores. For learning engagement, dedication ($M = 4.04$) ranked highest, followed by vigor ($M = 4.02$) and absorption ($M = 4.00$). These findings confirmed consistently high levels across all engagement dimensions.

Analysis of Differences in Learning Communities and Learning Engagement Across Demographic Variables

1) Testing Results of Research Hypothesis H1 and H2

Table 2 showed no significant differences ($p > .05$) in learning communities, learning engagement, or their dimensions across genders. Therefore, Hypotheses H1-1 and H2-1, which proposed significant gender differences in perceived learning communities and learning engagement among Zhengzhou X Music College students, were invalid.

Table 3 showed that ANOVA results revealed no significant differences ($p > .05$) in learning communities, learning engagement, or their dimensions across grades. These findings contradicted Hypotheses H1-2 and H2-2, which assumed significant differences by grade; therefore, both hypotheses

were invalid.

Table 4 presented a t-test comparing class leaders and non-class leaders on perceived learning communities and learning engagement. Significant differences were found across all dimensions and total scores ($p < .05$), with non-class leaders scoring consistently higher than class leaders. These findings supported Hypotheses H1-3 and H2-3, which proposed significant differences by position, were valid.

Table 5 showed significant differences ($p < .05$) in perceived learning community and learning engagement scores across different majors. As significant differences were observed in all dimensions, post hoc comparisons were conducted. Table 6 revealed the following trend: Computer Music Production < Music Theory < Instrumental Music < Choral Conducting < Vocal Music < Opera and Musical Theatre, indicating clear variations by major. Therefore, Hypotheses H1-4 and H2-4, which proposed significant differences across majors, were valid.

Table 1: The Levels of Learning Community and Learning Engagement

Dimension	M	SD	Interpretation
Educational Presence	4.06	1.01	High
Cognitive Presence	3.98	0.99	High
Social Presence	4.02	1.00	High
Learning Communities	4.02	0.98	High
Vigor	4.02	1.01	High
Dedication	4.04	1.00	High
Absorption	4.00	0.99	High
Learning Engagement	4.02	0.98	High

Table 2: Independent Sample T-test Analysis of Perceived Learning Communities and Learning Engagement by Gender

Dimension	Male (n=151)		Female (n=146)		t	p
	M	SD	M	SD		
Educational presence	3.97	1.05	4.15	0.96	-1.56	.120
Cognitive presence	3.90	1.04	4.06	0.94	-1.42	.156
Social presence	3.94	1.04	4.10	0.96	-1.45	.149
Learning Communities	3.93	1.02	4.10	0.94	-1.50	.134
Vigor	3.95	1.03	4.10	0.99	-1.28	.200
Dedication	3.95	0.99	4.13	1.00	-1.55	.122
Absorption	3.91	1.03	4.09	0.93	-1.56	.119
Learning Engagement	3.94	1.00	4.11	0.95	-1.49	.137

Table 3: ANOVA Analysis of Perceived Learning Communities and Learning Engagement by Grade

Dimension	Grade	n	M	SD	F	p
Educational Presence	Freshman	68	3.96	1.00	0.31	.820
	Sophomore	68	4.06	0.99		
	Junior	67	4.10	1.02		
	Senior	94	4.09	1.05		
Cognitive Presence	Freshman	68	3.92	0.97	0.14	.936
	Sophomore	68	4.00	0.96		
	Junior	67	3.96	1.06		
	Senior	94	4.02	1.00		
Social Presence	Freshman	68	3.93	1.00	0.29	.831
	Sophomore	68	4.00	0.97		
	Junior	67	4.04	0.98		
	Senior	94	4.08	1.04		
Learning Communities	Freshman	68	3.94	0.97	0.22	.880
	Sophomore	68	4.02	0.96		
	Junior	67	4.03	1.00		
	Senior	94	4.06	1.02		
Vigor	Freshman	68	3.93	1.01	0.31	.819
	Sophomore	68	4.08	0.98		
	Junior	67	4.01	1.03		
	Senior	94	4.05	1.04		
Dedication	Freshman	68	3.87	1.02	0.85	.466
	Sophomore	68	4.08	0.97		
	Junior	67	4.07	1.01		
	Senior	94	4.11	1.00		
Absorption	Freshman	68	3.90	0.97	0.35	.792
	Sophomore	68	4.03	0.91		
	Junior	67	3.99	1.02		
	Senior	94	4.06	1.03		
Learning Engagement	Freshman	68	3.90	0.98	0.47	.702
	Sophomore	68	4.07	0.94		
	Junior	67	4.02	1.00		
	Senior	94	4.07	1.00		

Table 4: Independent Sample T-test Analysis of Perceived Learning Communities and Learning Engagement by Positions

Dimension	Class Leader (n=57)		Non-class Leader (n=240)		t	p
	M	SD	M	SD		
Educational Presence	3.73	1.14	4.13	0.96	-2.78	.006
Cognitive Presence	3.74	1.09	4.04	0.96	-2.06	.041
Social Presence	3.76	1.09	4.08	0.97	-2.18	.030
Learning Communities	3.74	1.10	4.08	0.95	-2.38	.018
Vigor	3.77	1.10	4.08	0.98	-2.15	.033
Dedication	3.76	1.07	4.10	0.97	-2.32	.021
Absorption	3.72	1.14	4.07	0.94	-2.45	.015
Learning Engagement	3.75	1.08	4.09	0.94	-2.35	.020

Table 5: ANOVA Analysis of Perceived Learning Communities and Learning Engagement by Major

Dimension	Major	n	M	SD	F	p
Educational presence	Vocal Music	98	4.37	0.91	18.42	.000
	Instrumental Music	26	3.51	1.06		
	Opera and Musical Theater	87	4.50	0.76		
	Music Theory	33	3.27	0.99		
	Choral and Conducting	29	3.70	0.81		
	Computer Music Production	24	3.30	0.96		
Cognitive presence	Vocal Music	98	4.26	0.89	16.34	.000
	Instrumental Music	26	3.40	0.96		
	Opera and Musical Theater	87	4.40	0.77		
	Music Theory	33	3.29	1.07		
	Choral and Conducting	29	3.68	0.85		
	Computer Music Production	24	3.23	0.93		
Social presence	Vocal Music	98	4.34	0.87	17.79	.000
	Instrumental Music	26	3.56	1.03		
	Opera and Musical Theater	87	4.43	0.76		
	Music Theory	33	3.28	0.98		
	Choral and Conducting	29	3.62	0.81		
	Computer Music Production	24	3.20	1.09		
Learning Communities	Vocal Music	98	4.32	0.87	18.26	.000
	Instrumental Music	26	3.49	1.00		
	Opera and Musical Theater	87	4.44	0.74		
	Music Theory	33	3.28	1.00		
	Choral and Conducting	29	3.66	0.81		
	Computer Music Production	24	3.24	1.00		
Vigor	Vocal Music	98	4.30	0.88	17.07	.000
	Instrumental Music	26	3.47	1.14		
	Opera and Musical Theater	87	4.47	0.78		
	Music Theory	33	3.29	0.97		
	Choral and Conducting	29	3.73	0.92		
	Computer Music Production	24	3.22	0.96		
Dedication	Vocal Music	98	4.35	0.86	17.99	.000
	Instrumental Music	26	3.42	1.17		
	Opera and Musical Theater	87	4.47	0.76		
	Music Theory	33	3.41	0.92		
	Choral and Conducting	29	3.63	0.73		
	Computer Music Production	24	3.22	1.06		
Absorption	Vocal Music	98	4.30	0.90	16.68	.000
	Instrumental Music	26	3.37	1.14		
	Opera and Musical Theater	87	4.42	0.75		
	Music Theory	33	3.35	0.92		
	Choral and Conducting	29	3.67	0.77		
	Computer Music Production	24	3.27	0.95		
Learning Engagement	Vocal Music	98	4.31	0.86	18.07	.000
	Instrumental Music	26	3.42	1.13		
	Opera and Musical Theater	87	4.46	0.75		
	Music Theory	33	3.35	0.91		
	Choral and Conducting	29	3.67	0.78		
	Computer Music Production	24	3.27	0.96		

Table 6: Post-hoc Comparison of Perceived Learning Communities and Learning Engagement by Major

Dimension	Post-hoc Comparison Results
Educational Presence	Computer Music Production< Instrumental Music< Music Theory< Choral and Conducting< Vocal Music< Opera and Musical Theater
Cognitive Presence	Computer Music Production< Instrumental Music< Music Theory< Choral and Conducting< Vocal Music< Opera and Musical Theater
Social Presence	Computer Music Production< Instrumental Music< Music Theory< Choral and Conducting< Vocal Music< Opera and Musical Theater
Learning Communities	Computer Music Production< Instrumental Music< Music Theory< Choral and Conducting< Vocal Music< Opera and Musical Theater
Dimension	Post-hoc Comparison Results
Vigor	Computer Music Production< Instrumental Music< Music Theory< Choral and Conducting< Vocal Music< Opera and Musical Theater
Dedication	Computer Music Production< Instrumental Music< Music Theory< Choral and Conducting< Vocal Music< Opera and Musical Theater
Absorption	Computer Music Production< Instrumental Music< Music Theory< Choral and Conducting< Vocal Music< Opera and Musical Theater
Learning Engagement	Computer Music Production< Instrumental Music< Music Theory< Choral and Conducting< Vocal Music< Opera and Musical Theater

Correlation Analysis

This study explored the linear correlations and their significance among different dimensions using Pearson correlation analysis to quantify the relationships between variables. As shown in Table 7, all dimensions of perceived learning communities—educational presence, cognitive presence, and social presence—were significantly and positively correlated with all dimensions of learning engagement—vigor, dedication, and absorption ($p < .01$).

Table 7: Correlation Analysis of Learning Communities and Learning Engagement

	1	2	3	4	5	6	7	8
1. Educational presence	1							
2. Cognitive presence	.940**	1						
3. Social presence	.958**	.947**	1					
4. Learning communities	.983**	.979**	.985**	1				
5. Vigor	.955**	.940**	.945**	.963**	1			
6. Dedication	.951**	.931**	.945**	.959**	.943**	1		
7. Absorption	.948**	.936**	.937**	.957**	.949**	.932**	1	
8. Learning Engagement	.970**	.954**	.961**	.979**	.984**	.978**	.980**	1

Discussion

Impact of Demographic Background Variables on Perceived Learning Communities and Learning Engagement

The study found that demographic factors such as gender and grade did not significantly affect students' perceptions of learning communities or their levels of engagement. This supports previous research suggesting a balanced impact of these variables on students' learning behavior. However, significant differences were observed based on students' roles and majors. Students majoring in artistic disciplines, such as Vocal Music and Opera, exhibited higher recognition of the learning community dimensions (educational, cognitive, and social presence) and demonstrated higher levels of vigor, dedication, and absorption in learning compared to students from other majors. This suggests that the learning environment in artistic fields, which emphasizes personalized guidance, group collaboration, and practical performance, plays a crucial role in enhancing student engagement. Additionally, students in leadership positions (class leaders) showed lower levels of engagement, possibly due to the additional responsibilities that may distract them from fully engaging with the learning community.

Positive Correlation Between Perceived Learning Communities and Learning Engagement

The study confirmed a significant positive correlation between perceived learning communities and learning engagement, supporting Hypothesis H3. Students involved in active learning communities exhibited higher engagement, particularly in vigor, dedication, and absorption. Educational presence (e.g., resource support and teaching quality) had the strongest impact on students' learning vigor, while social presence (e.g., social support and peer relationships) primarily influenced dedication. Cognitive presence also contributed to engagement, specifically in terms of students' alignment with learning goals and personal development. These findings highlight the differentiated impact of various dimensions of learning communities on specific components of learning engagement, emphasizing the importance of creating supportive environments that foster academic enthusiasm and commitment.

Relationship Between Demographic Variables, Perceived Learning Communities, and Learning Engagement

The study revealed that the three dimensions of learning communities—educational presence, cognitive presence, and social presence—had a significant positive correlation with students' learning engagement. While demographic factors such as gender and grade had a minimal impact, the quality of the perceived learning community, major characteristics, and educational support played a more substantial role in influencing students' engagement. Students from artistic disciplines, like Vocal Music and Opera, showed significantly higher levels of engagement and stronger recognition of learning communities compared to those from technical fields like Computer Music Production. This suggests that the unique learning environments in artistic disciplines, which often involve more hands-on learning and peer interaction, foster greater student engagement.

Conclusions

This study explored the relationship between perceived learning communities and learning engagement among students at Zhengzhou X Music College. Based on the survey data, the following key conclusions were drawn:

Impact of Demographic Variables on Perceived Learning Communities: The study found that demographic variables such as gender and grade did not significantly affect students' participation in learning communities. However, differences in students' roles and majors significantly influenced their participation, with students in different positions and academic disciplines displaying notable variations in their engagement with learning communities.

Impact of Demographic Variables on Learning Engagement: Similar to perceived learning communities, gender and grade had little impact on learning engagement levels. However, students' roles and majors had a significant influence, with those in leadership positions or specific disciplines showing differing levels of learning engagement.

Correlation Between Learning Communities and Learning Engagement: The study confirmed a significant positive correlation between participation in learning communities and higher levels of learning engagement, including vigor, dedication, and absorption. This indicates that active involvement in learning communities can effectively enhance students' engagement in the learning process.

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