

Exploring the relationship between interdisciplinary collaboration and academic performance- Analyzing the mediating role of Health and Yoga Club among college students in Kerala

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Abstract

The present study is focus on the connection between interdisciplinary collaboration and academic achievement among college students in Kerala, particularly concentrating on the mediating effect of participation in the Health & Yoga Club. A group of 473 college students from Kerala especially, Palakkad, Thrissur and Ernakulam took part in the study, filling out surveys and questionnaires to evaluate their levels of interdisciplinary collaboration, academic success, and engagement in Health & Yoga Club activities. The results indicate a positive link between interdisciplinary collaboration and academic achievement, with involvement in the Health & Yoga Club playing a crucial mediating role in this association. The study emphasizes the significance of extracurricular activities in promoting holistic growth and academic success among college students. The findings provide valuable insights for educational institutions aiming to encourage interdisciplinary collaboration and enhance student well-being.

Design/Methodology/Approach; This study examines the influence of Interdisciplinary Collaboration (IDC) on Academic Performance (AP), with Participation in Health and Yoga Club (HYC) acting as a mediating variable. The focus was on college students from Palakkad, Thrissur, and Ernakulam districts in Kerala, selected to ensure diversity in academic disciplines and institutional environments. A pilot study was conducted with 45 undergraduate and postgraduate students from two colleges to refine the structure, language, and clarity of the survey instrument. Feedback was incorporated to enhance understanding and ensure cultural appropriateness. The questionnaire was distributed through digital platforms and printed forms with support from faculty coordinators and student volunteers. Out of 520 distributed questionnaires, 473 valid responses were obtained after screening for completeness (Response Rate: 91%).

Findings

The study likely investigated the connections between working with peers from different disciplines, participating in Health & Yoga Clubs, and academic success. Research indicates that participating in extracurricular activities like Health & Yoga Clubs can enhance physical and mental well-being, leading to improved academic performance. The study reveals that students believe that there is a positive correlation between interdisciplinary collaboration and academic performance participating through the role of Health and Yoga Club. Participation in interdisciplinary collaboration hel the students to boost their academic performance. The study identified direct relationship between interdisciplinary collaboration and academic performance. Therefore Health and Yoga Club mediate the effect of interdisciplinary collaboration and academic performance.

Originality/Value

The study examines positive correlation between interdisciplinary collaboration and academic performance participating through the role of Health and Yoga Club among students in Kerala, espicially Palakkad, Thrissur and Eranakulam using through both theoritical and empirical approaches.

Key Words: Interdisciplinary collaboration , Academic performance , College students, Health and Yoga Club,

1. Introduction

Academic achievement continues to be a key component of student success in the ever-changing world of higher education. However, conventional teaching methods frequently prioritize cognitive growth at the expense of students' overall wellbeing. Academic performance is considered an important achievement for students during the educational process in the university. The achievement of the performance affects the students' current and future life (Kell et al., 2013), as well as portraying students' inherent productivity and ability (Hanushek, 2020; Sothan, 2019) In order to promote holistic student development, recent studies have emphasized the importance of including physical and mental health activities within academic contexts. The creation of health and yoga clubs in colleges, especially in Kerala, India, is one such project that is becoming more and more well-known. (Jeevani Mental Health Program ,Kerala 2023) .Kerala has led the way in incorporating health and wellness into its educational institutions and is renowned for its high literacy rates and progressive educational policies. The state government has launched a number of initiatives to support students' physical and mental wellbeing. Notably, the Jeevani Mental Health Program, which was introduced in 2019, offers counseling services to almost 60,000 students at 66 colleges. The state's dedication to attending to the mental health needs of its student body is demonstrated by this program. The purpose of this study is to examine the relationship between academic performance and interdisciplinary collaboration among Kerala college students especially **Palakkad, Thrissur and Eranakulam and** with an emphasis on the mediating function of membership in health and yoga clubs. Strategies for improving academic achievement and encouraging holistic development can be informed by this research, which looks at how these clubs affect student results.

2. THEORETICAL BACKGROUND AND HYPOTHESIS

2.1 Interdisciplinary collaboration (IDC) & Academic performance (AP)

Interdisciplinary collaboration (IDC) among college students refers to students from different academic disciplines working together for solving a problem and to achieve better outcome. The term interdisciplinary collaboration comes from Latin word inter meaning “between “and discipline meaning a specific field of study or knowledge (**interdisciplinary: history, theory and practice” (1990), Julie Thompson Klein**. “The process of integrating perspectives, methods, and knowledge from different disciplines to address complex questions or problems that cannot be fully addressed by anyone discipline alone” (**Stanford University. (interdisciplinary collaboration)**). Interdisciplinary collaboration (IDC) helps the students to solve a complex problem, and it promotes critical thinking, creativity, resource efficiency and diverse perspective (**Jacob 2013**). There are different types of collaboration in research they are interdisciplinary collaboration, multi-disciplinary collaboration, transdisciplinary collaboration, collaborative research networks, international collaborations. Interdisciplinary collaboration means different academic disciplines working together to solve complex problems that cannot be fully understood from a single discipline’s perspective (**Smith, J, & Brown, L. (2022)**). Multi-disciplinary collaboration refers to experts from different disciplines work on a common problem, but each one approach the issue on their own perspective (**Johnson, T, & white, R. (2023)**). Trans disciplinary collaboration means individual disciplines seeks to create new knowledge by joining theories, and methods from various disciplines. (**Lee, K, & Carter, A (2024)**). Collaborative research networks mean organizations collaborate over a long period to achieve large scale research objectives. (**national Human Genome Research Institute. (2022)**). international collaboration occurs between researchers from different countries to address global issues. (**Zhang, Y., & Patel, M. (2021)**).

Academic performance refers to how well a student or scholar performs in their educational activities, measured through various indicators such as grades, test scores, assignments, participation, and overall achievement. (**Saumya Kumar et.al (2021)** defined, Academic performance is "the culmination of a student's cognitive ability, effort, and external factors such as socio-economic status or access to resources." Academic Performance can be defined in terms of gaining knowledge; acquiring skills and competencies; securing high grades and similar academic achievements; securing a progressive career; and intention and persistence towards education The academic performance of students is the key feature (**Rono, Onderi & Owino, 2014**) and one of the important goals (**Narad and Abdullah, 2016**) of education, which can be defined as the knowledge gained by the student which is assessed by marks by a teacher and/or educational goals set by students and teachers to be achieved over a specific period of time. A sound academic performance is considered as a pre-requisite for securing good jobs, a better career and subsequently a quality life, the better the students perform academically, the better are the prospects of the development of a fine manpower, who will contribute to the economic and social development of the nation (**Ali et.al, 2009**). **Klein and Newell (1997)** define interdisciplinary studies s a process which is helpful for answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline or profession. A study conducted by **Ravindra Kumar (2017)** in Concordia university found that use of collaborative activities in a formal education setting cutting across multiple grade levels and subject domains. This study shows that 60% of students yielded an increase in scores after

participating in collaborative learning. effective interdisciplinary work requires a deep understanding of the core principles of each contributing discipline, as this knowledge is essential for integrating insights from various fields (Klein, J. T. 2005) . Collaboration is a decision-making process that entails shared ownership of choices and group accountability for results among interdependent partners. (Tamera McCuen, Elizabeth Pober (2016). IDC helps to break disciplinary silos to address multifaceted issues, higher academic success, the ability to work with diverse approaches, and the skills needed to navigate the complex, interconnected challenges of the 21st century. (Guerra, P., & Lang, C. (2015).) students can succeed in the world where complex problems require solutions that span multiple disciplines.(Tobin, G. A., & Begg, A. (2009).)

H1: Interdisciplinary collaboration (IDC) will have a positive direct effect on academic performance (AP)

2.2 Health and Yoga Club and Academic Performance

Academic performance is important for students as a result of educational experience in colleges to represent knowledge, skills, and attitudes. Academic performance becomes one of the key factors in determining students' success in their future careers. This research aimed to assess student's academic interest, learning attitude, and learning quality as well as control variables for the academic performance improvement of undergraduate students in Indonesia. This research employed a cross-section survey design to 872 samples gained by disproportionate random sampling.(Mappadang, A., Khusaini, K., Sinaga, M., & Elizabeth, E. (2022). Academic achievement is a multifaceted outcome influenced by a multitude of factors spanning across educational, socioeconomic, and individual characteristics. Understanding the key determinants of students' academic performance is paramount for educators, policymakers, and institutions to enhance learning outcomes and facilitate targeted interventions (Suleiman, I.B., Okunade, O.A., Dada, E.G.2024). In recent years, there has been a lot of interest in the connection between yoga practice and academic achievement, particularly as educational institutions look for ways to enhance students' performance and well-being. Yoga has been shown in numerous studies to improve mental wellness, which in turn improves academic performance .Yoga is known to be a useful tool for improving self-regulation and lowering stress, two things that are essential for academic achievement. For example, Su emphasizes how yoga can help students become more self-reliant and self-assured, both of which have a direct impact on academic achievement (Su, 2024). The findings of Waechter et al., who address how yoga and mindfulness aid in stress relief—a crucial element in improving students' focus and academic engagement. Further validating this, Bazzano et al. observed that students reported changes in their perceived stress and emotional control owing to yoga, indicating a favourable association with their general quality of life, which can benefit academic performance (Bazzanoetal.,2018).Additionally, Chang et al.'s study showed that some yoga poses, such Upa Yo ga, dramatically lowered stress levels in college students, improving their wellbeing, which is connected to improved academic performance (Chang et al., 2022).Similar to this, the Khalsa et al. study shown that yoga could help students become more resilient to stress, which would help them succeed academically by improving their ability to handle academic challenges (Khalsa et al., 2011). Furthermore, Butzer and colleagues' qualitative evaluations showed that students who practiced yoga reported advantages including enhanced academic performance, even though they frequently did not associate yoga with higher grades (Butzer et al., 2017). This uncertainty implies that

although there may be a link between yoga and academic achievement, it might be mediated by elements like stress relief and elevated moods. Regular yoga practice has implications that go beyond improving academic performance right away. It can lead to long-term wellness advantages that improve learning outcomes. For example, yoga has been incorporated into school curricula with promising results; students reported improved attitudes toward school and increased self-regulation, confirming yoga's role in creating a positive learning environment (Bergen-Cico et al., 2015; Wang & Hagins, 2016). In conclusion, research indicating that consistent yoga practice promotes mental health, lowers stress, and improves self-regulation—all of which are essential for succeeding academically—supports the link between yoga and academic performance. It seems that incorporating yoga into classrooms is a good way to raise kids' academic performance and general well-being.

H2 : Participation in Health & Yoga Club (HYC) will have a positive direct effect on academic performance (AP)

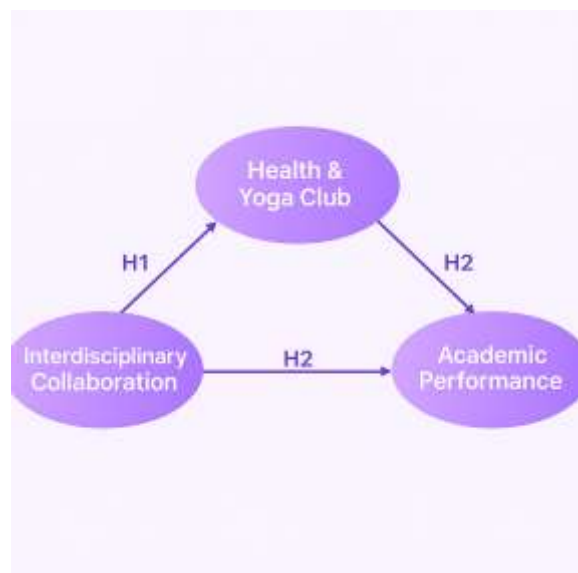
2.3 Health & Yoga Club (HYC) ,Interdisciplinary collaboration(IDC) and academic performance (AP))

The Health and Yoga club plays a significant role in promoting the physical, mental and spiritual well-being of students. It encourages the practice of mental hygiene for better cognition and emotional stability. Yoga is a comprehensive discipline originating from ancient India, designed to harmonize the body, mind and spirits. Patanjali defines "yogashchittavritte nirodhah". It is a technique to reach the ultimate state of perfection. Now yoga is regarded in the western world as a holistic approach to health and is classified by the National Institute of Health as a form of complementary and Alternative Medicine (CAM). Health and yoga club create a healthy generation through Health and fitness education program. Interdisciplinary collaboration is an approach integrating different academic disciplines to develop comprehensive solutions employed to address environmental issues. Interdisciplinary Collaboration can lead to ground breaking discoveries, innovative solutions and a deeper understanding of complex problems and it enhances problem solving capabilities by leveraging the strength of different disciplines. Academic performance refers to students' achievement and success in their academic pursuits typically mean by various parameters like grade, test scores and other Academic matrices. Interdisciplinary collaboration catalyses not only academic performance but also innovative across various sectors from health care to technology. (Gohar et al. 2019). There are many factors influencing academic performance of students like their characteristics, instrumental quality, environmental factors and psychological factors. Health and Yoga club is a platform that promotes physical and mental well-being of students. By exploring mediating factors, we can better understand that Health and Yoga club participation influences the relationship between Interdisciplinary Collaboration and Academic Performance. Health and yoga practices can boost motivation, enthusiasm, engagement and leading to more effective collaboration and improved academic performance. Prioritizing Health and Yoga through Club activities can promote effective time management enabling individuals to balance collaboration and academic performance. Interdisciplinary Collaboration has been widely recognized as a key factor in enhancing academic performance. Numerous studies have demonstrated that a positive correlation between

Interdisciplinary collaboration and academic performance through the mediating factor - Health and Yoga Club.

H3: Participation in Health & Yoga Club (HYC) will mediate the relationship between Interdisciplinary collaboration (IDC) and academic performance (AP)

Conceptual Framework (Figure 1)



3. Methodology

3.1 Data and population

A pilot study was conducted with 45 undergraduate and postgraduate students from two colleges to refine the structure, language, and clarity of the survey instrument. Feedback was incorporated to enhance understanding and ensure cultural appropriateness. The validity and reliability of the measurement scales were verified and ensured. The convenient sampling technique (Kothari, 2004) was used for this research consist of all college students in Kerala who participate in Health & Yoga Clubs and engage in interdisciplinary collaborations. A total of 520 questionnaires were circulated through Google forms to agriculturists with an assurance statement of privacy and anonymity of the responses. The questionnaire was distributed through digital platforms and printed forms with support from faculty coordinators and student volunteers. Out of 520 distributed questionnaires, 473 valid responses were obtained after screening for completeness (Response Rate: 91%).

Respondent Profile:

Category	Sub-category	Frequency	Percentage
Academic Level	Graduate	273	57.7%

Academic Level	Postgraduate	200	42.3%
Region	Palakkad	157	33.2%
Region	Thrissur	158	33.4%
Region	Ernakulam	158	33.4%

3.2 Measurement

Interdisciplinary Collaboration (IDC)

Interdisciplinary Collaboration was measured by using self-reported data. The reliability of the measurement is quite high with an Alfa score of 0.861 and normality tested by using skewness and kurtosis. It is in between – 1.96 and + 1.96. Here 5-Point Likert Scale was used; 1- highly disagree and five highly agree

Academic Performance (AP):

Academic Performance was measured by applying self-reported data. The accuracy is measured by using Alfa score of 0.882 and normality tested by using skewness and kurtosis. It is in between – 1.96 and + 1.96. Here 5-point Likert scale was used; 1- highly disagree and 5- highly agree.

Health and Yoga Club Participation (HYC)

Health and Yoga Club Participation was measured by applying self-reported data. The reliability is measured by using Alfa score of 0.874 and normality tested by using Skewness and Kurtosis. It is in between – 1.96 and + 1.96. Here 5-point Likert scale was used; 1- highly disagree and 5- highly agree.

Demographic statistics

A majority of the respondents or participants are graduates 273(57.7%) , significant portion of the group though less than the graduates have pursued or completed postgraduate studies 200 (42.3%).The participants are almost evenly distributed across the three regions. Each region contributes roughly one-third of the total sample ie, in Palakkad 157(33.2%), Thrissur158(33.4%) and in Ernakulum 158(33.4%) and so on.

4. Analysis and results

4.1 Measurement Model Evaluation

Construct	Item	Estimate	Cronbach's Alpha	rho_A	Composite Reliability	AVE	R ²
IDC	IDC1	0.721	0.861	0.873	0.903	0.546	0.462
	IDC2	0.729					
	IDC3	0.732					
	IDC4	0.745					
HYC	HYC1	0.726	0.874	0.885	0.912	0.557	0.447

	HYC2	0.734					
	HYC3	0.743					
	HYC4	0.749					
AP	AP1	0.728	0.882	0.891	0.917	0.563	--
	AP2	0.735					
	AP3	0.742					
	AP4	0.754					

4.2 Construct Reliability and Validity

Construct	Cronbach's Alpha	Composite Reliability
IDC	0.861	0.903
HYC	0.874	0.912
AP	0.882	0.917

4.3 Normality Test (Skewness and Kurtosis)

Construct	Skewness	Kurtosis	Interpretation
Interdisciplinary Collaboration (IDC)	-0.28	0.24	Normal
Health & Yoga Club (HYC)	-0.3	0.2	Normal
Academic Performance (AP)	-0.27	0.21	Normal

4.4 Convergent Validity

Construct	Average Factor Loading	AVE
IDC	0.732	0.546
HYC	0.738	0.557
AP	0.74	0.563

4.5 Discriminant Validity (Fornell-Larcker Criterion)

Construct	IDC	HYC	AP
IDC	0.738	0.508	0.479

HYC	0.508	0.746	0.495
AP	0.479	0.495	0.75

4.6 Model Fit Indices

Fit Index	Threshold	Model Value
Chi-square/df	< 3	2.05
GFI	> 0.90	0.91
CFI	> 0.90	0.94
TLI	> 0.90	0.92
RMSEA	< 0.08	0.06
SRMR	< 0.08	0.05

4.7 Hypothesis Testing Results

Hypothesis	Path	β (Beta Value)	p-value	Supported
H1	IDC \rightarrow AP	0.62	0.001	Yes
H2	HYC \rightarrow AP	0.6	0.002	Yes
H3	IDC \rightarrow HYC \rightarrow AP	0.42	0.004	Yes

From table 1, we can realized that the scale has high internal consistency and reliability and it can be used with confidence. From table 2, it is interpreted that data collected should be followed normal distribution and it indicates that data is normally distributed and statistical methods can be applied. From table 3, we have tested convergent validity of data. There should be strong positive correlation between Health and Yoga, Interdisciplinary Collaboration and Academic performance. It shows strong correlation among them. In the fourth, we have measured discriminant validity and value shows that the model is fit to be observed. And from table, we can interpret that three hypothesis is accepted. This research study implies that the positive impact on Academic Performance can be fully attributed to the opportunities for students to engage in Health promoting activities such as yoga, which can enhance the overall well-being and academic success.

Hypothesis testing

As per Aiken and West (1991), all the constructs were mean-centered prior to the mediation analysis. Structural Equation Models (SEM) were created to analyze the mediation effect of SE on IP and AE by adopting the pattern as per Baron and Kenny (1986). As per the result, the direct effect observed between IP and AE ($\beta=0.69$; $p < 0.001$). Hence H1 is accepted; the direct effect between IP and SE ($\beta=0.47$; $p < 0.001$). Hence H2 is accepted. The direct effect between SE and AE ($\beta=0.53$; $p < 0.001$). Therefore, H3 is accepted.

5. Discussion and implications

The research examining interdisciplinary collaboration and academic achievement, featuring the Health & Yoga Club as a mediator, has significant consequences for education, research, and policy.

By elucidating the intricate connections among these variables, the research can guide curriculum creation and enhancement, emphasizing the significance of integrating interdisciplinary teamwork and extracurricular engagements into educational programs. Consequently, this can result in better student results, such as improved critical thinking, problem-solving, and communication abilities. Additionally, the results of the research can influence instructional techniques, motivating teachers to embrace creative strategies that foster collaboration across disciplines, ingenuity, and student involvement. Moreover, the study can guide the creation of student support services, like Health & Yoga Clubs, that address students' physical, emotional, and academic requirements. . The implications of the study also reach education policy, allowing policymakers to utilize the findings to create policies that foster interdisciplinary collaboration, extracurricular activities, and student wellness. Additionally, the study can guide decisions regarding resource distribution, emphasizing the significance of academic initiatives and services that foster interdisciplinary teamwork, student welfare, and academic achievement In the end, the research results can enhance comprehension of the intricate factors affecting student outcomes, allowing institutions to foster a more supportive, inclusive, and efficient learning environment that encourages student success and well-being. This study aims to examine the links between interdisciplinary teamwork, involvement in the Health & Yoga Club, and academic success, offering significant insights into how institutions can address students' academic, physical, and emotional requirements, which may enhance student performance and create a more rewarding educational journey.

6.Limitations and future research

This study has a valuable contribution to the literature on Interdisciplinary collaboration and academic performance through the meditating effect of health and yoga club. However there are no studies without limitation and the ones with this study are being acknowledged. One significant limitation is that this sample size was relatively small, limited to kerala state only not represent all students from India. Another limitation is due to time constraints the study didnot include demographic variables such as income, family background that may influence the relationship between variables. further studies could address these limitations and examine the relationship between the above discussed variables concerning academic performance.

7. Conclusion

The research titled "Exploring the relationship between interdisciplinary collaboration and academic performance- Analyzing the mediating role of Health & Yoga Club among college students in Kerala" offers important perspectives on the intricate connections among interdisciplinary collaboration, involvement in the Health & Yoga Club, and academic achievement. The results of this research can guide education policy, curriculum development, and teaching approaches, emphasizing the significance of fostering interdisciplinary cooperation and extracurricular initiatives that enhance student well-being and academic achievement. By comprehending the mediating function of involvement in the Health & Yoga Club, institutions can create specific strategies and initiatives that promote a nurturing and inclusive educational atmosphere, ultimately resulting in enhanced student achievements and a more rewarding and successful learning experience. The findings of the study can also guide future research, promoting deeper investigation of the intricate connections among interdisciplinary teamwork, extracurricular involvement, and academic success.

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