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The Impact of Instructional Materials, Student Well-Being, and Learning Environment on Academic Engagements at Ocean University, China

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Abstract

Globally, poor academic engagement is considered a vital issue that affects most students. In China, poor academic engagement has negatively impacted students' motivation and learning capabilities, ultimately eroding the university's reputation. These issues stem from the inadequacy of instructional materials, students' well-being, and the learning environment, which lead to poor academic engagement at Ocean University. Hence, this study examines the impact of instructional materials, students' well-being, and learning environment on academic engagement at Ocean University. The population in this study comprised 39,500 students from Ocean University, China. The researcher employed a descriptive and correlational design, focusing on quantitative analysis, and utilised a self-administered questionnaire as the data collection instrument. The researcher validated the instrument through expert review and conducted a pilot study using 30 samples. A sample of 283 students was selected using both simple and stratified random sampling techniques, yielding a success rate and response rate of 73.5%. SPSS was used to analyse the generated data and to assess the hypothesis testing using regression analysis. This study confirmed a significant and positive correlation between instructional materials, students' well-being, learning environment, and academic engagement in Ocean University, China. In addition, the results from the regression analysis showed that instructional materials, students' well-being, learning environment, and academic engagement had a P-value of 0.000 ($p < 0.001$). In conclusion, instructional materials and learning environment are significantly and positively associated with promoting academic engagement by enhancing motivation, access to learning resources, and quality of teaching. The well-being of students has a significant impact on academic engagement, continuously empowering student success by reducing stress and anxiety, and enhancing social connection, sense of accomplishment, and learning outcomes. This study is significant in addressing the gap identified in previous studies while

contributing to the body of knowledge and promoting academic engagement at Ocean University in China.

Keywords: Academic Engagement, Instructional Materials, Students' Well-Being, Learning Environment, Ocean University

Introduction

Education is essential for pursuing social justice because it equips individuals with the skills and knowledge necessary for personal and societal advancement (Liu & Liang, 2024). The improved quality of education plays a crucial role in promoting students' engagement, enhancing their future career capabilities, and securing better job opportunities for a better life (Luo et al., 2023). It further agrees that human capital development helped foster students' success in terms of academic engagement. Students face challenges that result in poor academic engagement, which hinders their future career pathways. However, these issues associated with student academic engagement result from instructional materials, students' well-being, and learning environment, thereby creating a menace for the student's academic welfare, reducing the lecturer's flexibility and responsibility to work efficiently, and promoting students' academic engagement (Luo et al., 2023; Guo & Laokulrach, 2023). The statistics revealed a significant decline in academic engagement among students at Ocean University, China, which was attributed to a lack of instructional materials, inadequate student well-being, and a poor learning environment that hindered students' capacities to achieve academic excellence (Pan & Yao, 2023; Cao et al., 2024). These issues contribute to the high unemployment rate, reduced efficiency and productivity, and negatively influence young graduates' economic and social opportunities (Guo & Laokulrach, 2023). In 2023, around 37.75 million students were enrolled in degree programs in China's public colleges and universities (Nusair et al., 2024). These further proved that there is a high stake in enhancing education quality and giving opportunities for students to develop skills and knowledge by exploring various engagement tactics to excel in their academic pursuits. Instructional materials have proven to be a powerful strategy for effective teaching and learning (Qiao et al., 2022). The importance of quality and adequate instructional materials in teaching and learning is evident through their effective use in classroom teaching. Instructional materials here include all the tools the lecturers can use to make the learning more exciting and memorable. According to Yang et al. (2023), instructional materials include books, audio-visual materials, software, and educational technology hardware. He further opines that the availability, adequacy, and relevance of classroom instructional materials can positively influence the quality of teaching, thereby enhancing students' learning and academic engagement. A study by Han and Gao (2023) revealed that poor student well-being minimises their ability to excel in academic engagement, reducing their chances of improving future career paths. A lack of skills and knowledge hinders students' creativity and pursuit of excellence. By empowering students with access to education, they tend to explore various opportunities to excel, contribute to academic growth, and enhance their capabilities, ultimately improving their lives for the future (Qiu et al., 2023). A study confirmed that student well-being helps to empower and promote students to navigate various social settings and interact with people from diverse backgrounds (Li, 2023). It further revealed that education exposes individuals to cultural capital through student well-being, such as art, literature, music, and other forms of cultural expression. A study conducted by Huang et al. (2024) found that a learning environment helps promote students' willingness to acquire skills and knowledge, which has a positive impact on their level of engagement. It further

revealed that engagement has a direct influence on a student's academic excellence. A poor learning environment has significantly hindered students' ability to acquire the required knowledge, thereby undermining their engagement. A lack of infrastructure can hinder student academic engagement, resulting in poor academic performance. A study by Xiao and Han (2024) argued that poor facilities would hinder students' ability to cope during classes, thereby undermining efforts to improve learning quality for their future enhancement.

Inadequate academic engagement has an issue that negatively influences students' future career paths due to poor quality access to education, poor accessibility of learning materials, inadequate environment, marginalisation of students, inadequate curriculum, and lack of required skills by the lecturer and students to excel in the pursuit of academic engagement (Yu et al., 2023; Cao et al., 2024). Furthermore, these issues exacerbate a significant gap in student engagement, resulting in low academic engagement and performance (Tao & Tien, 2024). These issues, associated with poor infrastructure, accessibility of learning materials, cultural diversity, and equality, have created considerable concern (Wang et al., 2023). Most countries in Europe, Asia, and Africa are greatly affected by the concern of poor students' academic engagement, which has gradually reduced substantial student involvement and performance, thereby threatening their future career opportunities and posing a threat to a high unemployment rate for the future (Yuan, 2024; Cooney-O'Donoghue, 2024). In China, students face poor academic engagement as a significant challenge, resulting from a lack of instructional materials, inadequate student well-being, and a poor learning environment that hinders the fostering of quality learning activities and engagement (Hu et al., 2024). Based on the findings generated from the empirical and statistical data, it revealed that there had been a vast decline in students' academic engagement in the past five (5) years, as recorded from 2019 (34.1%) to 2023 (20.9%), due to lack of instructional materials, inadequate students' well-being, and poor accessibility of learning environment, and which has reduced the engagement rate, create enormous emotional stress, anxiety and create fears of employment in their future (Pan & Yao, 2023; Bao et al., 2024). These issues arose due to poor lecturer capabilities, ineffective curriculum, inadequate knowledge transfer, and a lack of infrastructural capacity to foster students' engagement in their academic success paths (Wang et al., 2023; Li, 2024). Instructional materials are considered essential in teaching and learning at all levels of education, as they help to assess student learning ability, aided by textbooks and other resource materials. Absence or inadequacy causes lecturers to handle subjects in an abstract manner, portraying them as dry and unexciting (Ashraf et al., 2022). According to Iqbal et al. (2022), universities whose lecturers utilize more instructional resources tend to perform better than those whose lecturers do not use instructional materials. These issues arose as they impacted the learning capabilities of both lecturers and students. When there are insufficient learning resources and poor quality teaching, students suffer more, leading to lower involvement in pursuing academic excellence and reduced engagement. Most studies examining the state of instructional resources in universities often attribute poor engagement to the lack of or inadequacy of these materials. As the studies above indicate, instructional materials are essential for teaching and learning; however, they are often inadequate in many universities (Ge, Wang, & Li, 2023). Although studies clearly demonstrate a strong link between high-quality instructional materials and effective teaching and learning processes, they have not established a similar connection with students' academic performance. Improving student well-being is crucial, as it addresses the fundamentals of student happiness and sense of belonging (Mao et al., 2024). Measuring the

relationship between student engagement and student well-being tends to promote happiness, satisfaction, and a sense of belonging among students, which in turn impacts their creative capabilities and helps them make informed decisions, ultimately shaping their academic participation and engagement. According to Sun et al. (2023), providing students with the opportunity to excel and create a sense of happiness tends to reduce their stress levels and increase their effectiveness in learning, which is directly related to their academic engagement. However, many students may hold differing views on the university's strategies for developing their well-being, which could pose a threat to their academic activities (Nia et al., 2023; Cao et al., 2024). The learning environment is vital as it helps promote the sustainability of students' learning capacity, improve their conducive mindset, and promote academic engagement and excellence (Peng & Chen, 2023). Recognizing that the learning environment plays a crucial role in nurturing and developing quality education is essential. Due to inadequate funding from the Chinese government, the learning environment often suffers alongside the students' ability to engage effectively. As such, the learning environment remains an important area that should be studied and well-managed to enhance students' academic performance and engagement. The recent decline in academic engagement among students in China has caused considerable concern among parents, lecturers, and students alike. However, the quality of education depends not only on the lecturers performing their duties but also on promoting effective coordination within the university's learning environment, which leads to student academic engagement. Despite several empirical studies examining academic engagement at different levels of education in China, critical gaps remain in the current literature, necessitating further empirical evidence (Meng et al., 2023; Huang & Jew, 2024). This study tends to address the gap relating to poor learning environments that focuses on poor infrastructure, lighting, classroom setting, and learning projectors, thereby posing a challenge for the students to believe in the university's capability to provide a healthy learning environment for continuously learning process to fosters quality academic engagement and activities that helped to eradicate the poor learning environment and to provide recommendation by maximising the potential of learning environment to yield excellent academic outcomes, improve the high level of academic engagement for students. The research novelty lies in holistically examining the combined influence of instructional materials, student well-being, and learning environment on academic engagement, rather than studying them in isolation. The contribution is a more comprehensive understanding of how these interconnected factors create a supportive educational ecosystem that enhances student participation and learning outcomes, providing practical insights for educators to foster greater student engagement. Therefore, the researcher aims to determine the impact of instructional materials, students' well-being, and learning environment on academic engagement at Ocean University, China.

Literature Review

Academic Engagement

Academic engagement is a complex concept that encompasses the behaviours, emotions, and mental efforts students exhibit toward their learning. Students' academic engagement is described as "the time and energy students devote to educationally sound activities inside and outside of the classroom, and the policies and practices that institutions use to induce students to take part in these activities" (Bao et al., 2024). According to Liu et al. (2023), "Student involvement refers to the quantity and quality of the physical and psychological energy students invest in the college experiences. His student involvement theory focuses

solely on the motivation and behaviour of the students at a university. As students become more engaged academically and socially, they feel a greater attachment to the institution and become satisfied with their experiences. Academic engagement can also be understood as "a measure of student involvement with university studies," which encourages students to develop "a deeper understanding of their university work" (Li et al., 2023). Another perspective shows engagement occurs when "students take advantage of the range of learning opportunities their institutions provide outside the classroom" (Wang et al., 2023). Furthermore, Liu et al. (2023) define academic engagement as "the time and energy students invest in educationally purposeful activities." The benefits of students' engagement and the factors that impact it are now highlighted to give an overview of the engagement research. The level, type, and frequency of engagement have been shown to influence several educational outcomes, including retention, persistence, and "growth in academic competence." Khuram et al. (2023) found that students oriented toward future goals, such as careers after college, resulted in "an increase in the level of students' engagement with their studies, and potentially, an increased likelihood that they would continue their studies long-term." Research indicates that students who are behaviourally engaged are more likely to develop a sense of belonging and commitment to their university, which can further boost their academic performance (Pan & Yao, 2023). Thus, promoting behavioural engagement requires creating a supportive and stimulating educational environment that encourages active participation and a positive attitude toward learning. To foster behavioural engagement, universities and educators can implement various strategies. Research indicates that cognitively engaged students are more likely to achieve higher academic outcomes because they are better equipped to comprehend complex concepts and solve problems effectively (Guo et al., 2023). Therefore, promoting cognitive engagement involves designing learning experiences that challenge students intellectually and encourage them to think deeply about the material. Educators can enhance cognitive engagement by designing activities that foster critical thinking and problem-solving. Inquiry-based, project-based, and collaborative learning are effective methods for encouraging cognitive engagement.

Instructional Materials

Liao and Mhunpiew (2024) emphasize the significance of instructional materials in education, as they play a vital role in facilitating effective teaching and learning. Ke et al. (2023) emphasize that textbooks are irreplaceable and central to the educational process at all levels of university education. Textbooks often serve as students' primary source of information and course materials (Koksharov et al., 2023). Qiao et al. (2022) note that lecturers' reliance on textbooks and the availability of relevant books significantly impact the quality of education and instructional materials. The demand for textbooks is linked to high costs, as the educational process heavily relies on books (De & Lu, 2024). The influence of instructional materials on students' academic engagement is significant and multi-dimensional, affecting various aspects of learning outcomes and achievement (Bulolo et al., 2022). Thus, instructional materials improve understanding and comprehension. High-quality instructional materials support understanding of academic content by providing visual aids, examples, and explanations, which lead to better learning outcomes. Additionally, they boost engagement and motivation. Interactive and engaging instructional materials capture students' interest and motivation, increasing their participation in learning activities and leading to better academic performance. Instructional materials also promote retention and recall (Ashraf et al., 2022). They help students retain and retrieve information through repetition,

visualization, and multisensory experiences, resulting in stronger memory and higher academic achievement. Furthermore, instructional materials are designed to cater to different learning styles. They accommodate diverse preferences and needs, ensuring equitable learning opportunities and positively influencing academic engagement. Moreover, they enable real-world applications. Materials that include real-life examples, case studies, and practical activities help students connect theoretical knowledge to real-world situations, making learning more relevant and applicable, and boosting engagement (Wang & Wen, 2023). Additionally, instructional materials foster critical thinking skills. Well-designed materials challenge students with complex problems, encourage analysis and synthesis of information, and promote higher-order thinking, ultimately leading to improved academic performance and engagement.

H_1: There is a significant positive impact of instructional materials on academic engagement at Ocean University.

Students' Well-Being

Well-being is defined as the quality of a person's life and overall standard of living. It is a multi-dimensional concept that includes both objective material elements and subjective psychological aspects (Dong et al., 2024). In this report, students' well-being refers to the psychological, cognitive, social, and physical functioning and capabilities necessary for a happy and fulfilling life (Liu & Han, 2023). Student well-being is crucial to educational research and practice, as it has a significant impact on academic engagement and overall development. In a typical learning environment, student well-being is influenced by four primary factors: instructors, course design, classroom climate, and available resources. These interconnected and often interdependent factors shape student well-being throughout the teaching and learning process (Sun et al., 2024). The well-being of students is another important aspect that deserves attention. University life can be stressful for all students, but those facing additional challenges may experience heightened pressures related to accessibility, academic involvement, and social acceptance. Students often encounter mental stress during peer interactions, which influences how they express their feelings and develop coping strategies for managing stress. These well-being strategies help monitor students' mental health and enable timely interventions, creating a more supportive educational environment. It is also helpful to encourage students to reflect on their emotional states and suggest resources or coping mechanisms tailored to their individual needs. Providing accessible mental health resources increases awareness, helps students navigate their challenges in higher education, and promotes overall well-being (Nie et al., 2024). Furthermore, fostering a supportive and inclusive campus environment is crucial for enhancing student well-being. This can include launching awareness campaigns to reduce mental health stigma, training faculty and staff on mental health issues, and ensuring students have access to appropriate mental health resources (Li et al., 2024). Universities that create engaging and interactive learning environments promote greater academic involvement. A sense of competence in learning enhances student well-being by building confidence in their academic abilities. Students who feel capable of meeting academic challenges are more likely to persist and reach their goals. This sense of competence is supported by supportive teaching practices and resources that help students succeed (Li, 2023). Additionally, academic well-being involves developing lifelong learning skills such as critical thinking, problem-solving, and self-regulation, which are vital for future success. Universities that emphasize holistic education and encourage these skills contribute to students' well-being and prepare them for future challenges (Wu, 2023).

H_2: There is a significant positive impact of student well-being on academic engagement at Ocean University.

Learning Environment

According to Yu et al. (2024), the learning environment encompasses learning resources and technology, means of teaching, modes of learning, and connections to societal and global contexts. The term also includes human behavioural and cultural dimensions, including the vital role of emotion in learning. The learning environment is a composite of human practices and material systems, much like ecology, which combines living things and the physical environment (Peng & Chen, 2023). Contemporary students deserve learning environments that cater to their individual and collective needs. To meet this challenge, educational leaders must provide physical and cultural environments that are empowering and engaging (Dai et al., 2024). Learning environments vary from classroom to classroom (or from context to context), each with its unique elements. According to Song et al. (2023), learning environments can be learner-centered, knowledge-centered, assessment-centered, and community-centered. Learner-centred environments are designed for the active construction of knowledge by and for students (Gong & Rao, 2023). Knowledge-centred learning environments support students' deep investigations of big ideas through generative learning activities. Assessment-centred learning environments provide frequent, ongoing, and varying opportunities for assessment, including opportunities for revision and self and peer assessment (Fang et al., 2024). Community-centered environments value collaboration, the negotiation of meaning, respect for multiple perspectives from which knowledge is constructed, and connections to the local community and culture (Huang & Jew, 2024). The learning environment comprises some components that influence the student's learning curve. According to Xiao and Han (2024), these components include people, teaching materials, technical tools, learning resources, curriculum, training and instruction, and physical environment/learning space. The people are the individuals who directly or indirectly affect students through connections or relationships, which can contribute to students' growth and success in their careers. The teaching materials, technical tools, and learning resources are highly advanced tools or other instructional resources aligned with the curriculum as a part of student learning support. The curriculum, training, and instruction are the core foundations of the learning process; they influence one another and play vital roles in facilitating the flow of knowledge and delivery of instructional content/curriculum. Learning factors are attributed to faulty work or study methods and the narrowness of the experimental background, which can impact the learning process. Physical factors include health, physical development, nutrition, visual and physical defects, and glandular abnormalities. Mental factors, such as interest, cheerfulness, and open-mindedness, play a crucial role in personality development. Personal factors, such as instincts and emotions, and social factors, including cooperation and rivalry, are closely tied to a complex psychology of motivation. The lecturer's personality is an essential factor in the learning environment. They are key factors that create a favourable teaching-learning environment, making the instructional process easy, enthusiastically adaptable, and functional (Huang et al., 2024).

H_3: There is a significant positive impact of the learning environment on academic engagement at Ocean University.

Conceptual Framework

The conceptual framework was derived from various theories and models related to instructional materials, students' well-being, learning environment, and academic engagement. Additionally, this study aims to determine the impact of instructional materials, students' well-being, and learning environment on academic engagement at Ocean University, China.

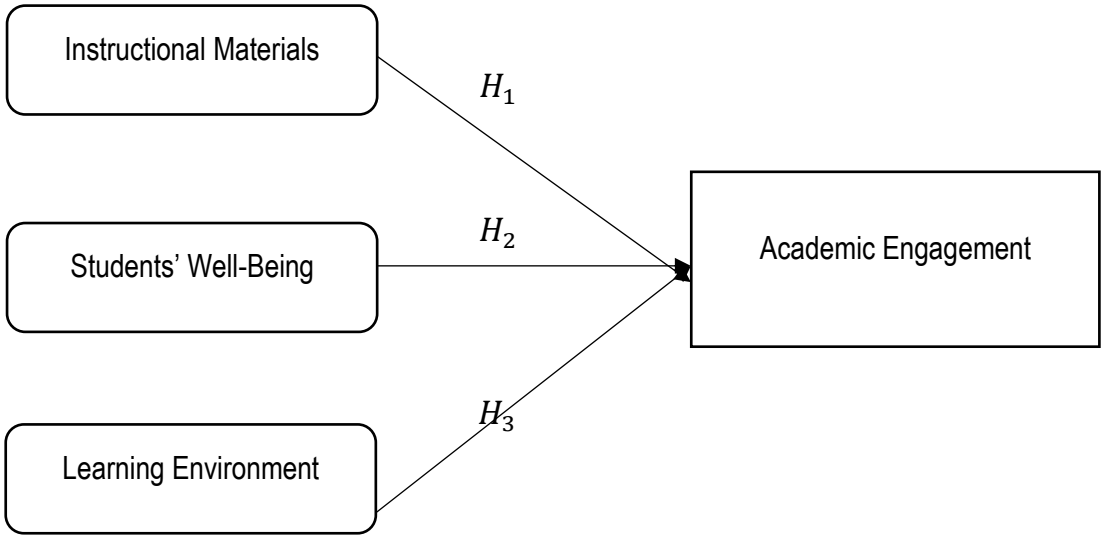

Figure 1: Conceptual Framework of the Study

Research Methodology

Population, Sampling Technique, and Sample Size Procedures

Descriptive and correlational designs are adapted to suit quantitative research design and proffer solutions to the identified research questions (Ellis, 2010). The descriptive design helps gather information about the respondents, such as their gender, age, level of study, factors of academic engagement, and quality of academic engagement at Ocean University, to determine the frequency of occurrence and categorise the results. The correlational design was adopted to examine the relationships between instructional materials, students' well-being, learning environment, and academic engagement. The researcher adopted simple and stratified random sampling in data collection among students at Ocean University. To determine the sample size of respondents for the target population, the researcher used a statistical table to support the sample size (Dawes, 2012; Jacqueline, 2013; Krejcie & Morgan, 1970). According to Krejcie and Morgan (1970), a target population of 39,500 students typically yields a sample size of 378 to 381, with a 5% margin of error and 95% confidence. The questionnaires consist of sections A to E. Section A focuses on the demographic data, which includes personal data such as age, gender, type of disability, year of study, and geographic region. Section B focuses on the dependent variable (academic engagement), while Sections C to E focus on the independent variables (instructional materials, students' well-being, and learning environment), using a 5-point Likert scale (Dawes, 2012; Johnson & Clark, 2014; Joshi et al., 2015). The measurement of constructs and their Cronbach alpha of sources: academic engagement (0.910), instructional materials (0.889), students' well-being (0.841), and learning environment (0.906) (John & Fraser, 1983; Pintrich et al., 1993; Seligman & Csikszentmihalyi, 2001; Handelsman et al., 2005). The questionnaire items were adapted from different sources for each construct to support the survey and strengthen the expected

findings of this study. They provide further help to enable students to develop a perception of engagement strategies and their benefits in promoting academic engagement, supported by students' actualisation and efficiency. The instrument's pilot study was conducted, which provided an acceptable level of reliable statistics, ranging from 0.755 to 0.865, for all variables. It further confirmed that the constructs are reliable and acceptable for future investigations in this study, as their Cronbach's alpha values are above 0.70. The researcher has distributed this survey to the respondents (students) of Ocean University of China via a self-administered (face-to-face) questionnaire to generate the data (Joshi et al., 2015). Of the 384 questionnaires distributed, 283 were successfully returned, yielding a 73.5% response rate (Bryman & Bell, 2018). Therefore, the sample size of this study is 283, which met the statistical criteria required in this study. It further demonstrated that students participated fully and were deeply concerned with identifying the root causes of poor academic engagement at Ocean University, China, and providing ways to mitigate these issues to a minimum level (Huang et al., 2024).

Data Analysis

After the data collection was completed and acquired on the impact of instructional materials, students' well-being, and learning environment on academic engagement at Ocean University, China, the Statistical Package for Social Science (SPSS) (version 28) was used to analyse the data generated for this study (Ang, 2017; Mark & Adrian, 2019). The researcher has explored the following analyses: descriptive analysis, normality testing, correlation and regression analysis for instructional materials, students' well-being, learning environment, and academic engagement. Firstly, descriptive testing was employed to determine the respondents' views on the profile of academic engagement. Secondly, normality testing, which involves assessing the skewness and kurtosis of values, was conducted to ensure that the data met the multicollinearity requirements and confirmed whether the data generated exhibited a normal distribution. Thirdly, the correlation analysis helps to effectively examine the relationship between instructional materials, students' well-being, learning environment, and academic engagement. Lastly, regression analysis helps to determine the impact of instructional materials, students' well-being, and learning environment on academic engagement at Ocean University, China.

Results

Demographic Data Analysis

The students are categorised into male and female genders in this study, as follows: males, 52.3% (148 respondents), and females, 47.7% (135 respondents). The study further indicated that male students from Ocean University had the highest participation rate. According to Li, Tang, and Zheng (2023), males are more concerned and empathetic about instructional materials, students' well-being, and the learning environment, as these factors directly influence their level of engagement at the university, which in turn affects their academic engagement. It further affirms that male students perceive poor academic engagement as a serious issue that affects their academic progress, thereby reducing their performance. This process would further enhance the quality of education attained by students, thereby promoting the quality of feedback, brainstorming, and academic activities that contribute to successful academic engagement (Peng, Lv, Low & Bono, 2024). Table 1 indicates that the age group of students involved in this study, which is 16 – 20 years 52.3% (148 respondents), 21 – 25 years 31.1% (88 respondents), 26 – 30 years 12.7% (36 respondents), and 31 years and

above, 3.9% (11 respondents). In addition, the 16–20 age group comprises 52.3% (148 respondents), indicating the highest rate of participation in the study on the impact of instructional materials, student well-being, and learning environment on the academic engagement of students at Ocean University, China. According to Qiu, Ni, and Yang (2023), the success of academic students depends on their materials and learning environment, which fosters a progressive learning path that encourages students to continue their success. Therefore, students are emphasised on the significant impact of instructional materials, students' well-being, and learning environment on the academic engagement of students at Ocean University, China. In this study, the respondents are the students at Ocean University, China. The participating students are students from years 1 to 3. It further revealed that students in their first year comprised 46.6% (132 respondents), those in their second year comprised 20.1% (57 respondents), and those in their third year comprised 33.2% (94 respondents), who fully participated and were involved in this study. These findings demonstrated that the Year 1 students were fully involved in this study, as it raised significant concerns among the newly engaged students at the university, and they considered it crucial in identifying the root cause of the challenges resulting from poor academic engagement in achieving academic excellence. According to De and Lu (2024), the year of study contributes to the level of engagement required to excel in academic activities, which involve teamwork, classroom tutorials, brainstorming, and academic interaction, thereby fostering the development of academic engagement. In this study, the factors contributing to the development of academic engagement were highlighted as follows: instructional materials, students' well-being, and the learning environment. Based on the findings, it was concluded that instructional materials were reported by 40.6% (115 respondents), students' well-being by 18.0% (51 respondents), and learning environments by 41.3% (117 respondents), all of which were fully integrated and participated in this study. The results showed that students agreed that learning environments have the highest impact, as they significantly contribute to the development of students' well-being and the pursuit of academic activities, thereby enhancing the success of engagement at Ocean University. According to Fang, Lu, Zhang, and Qin (2024), learning environments that support students help them concentrate effectively and foster a high level of commitment towards their academic activities. Additionally, instructional materials have proven effective in enhancing student engagement, thereby providing an avenue for improving academic excellence. In this study, the students are categorised based on the quality of academic engagement at Ocean University as follows: Yes or No. The results concluded after data were generated from the students, proving that they agreed and believed the Ocean University has a high level of academic engagement, with 79.2% of 224 respondents. The 20.8% (59 respondents) of students who disagreed with the level of quality academic engagement were included in this study. The findings revealed that students agreed that different criteria make a university have the quality of academic engagement, which include quality lecturers, feedback assessments, conducive learning environments, and sufficient academic learning materials to support student capabilities and creativity. According to Han and Gao (2023), the quality of academic engagement enables students to perform well with the right learning materials and quality lecturers, thereby harnessing their knowledge and achieving a high-quality academic engagement.

Table 1
Demographic Information

Items	Frequency (n = 283)	Percentage (%)
Gender		
Male	148	52.3
Female	135	47.7
Age Group		
16 – 20 years old	148	52.3
21 – 25 years old	88	31.1
26 – 30 years old	36	12.7
31 years old and above	11	3.9
Level of Study		
Year 1	132	46.6
Year 2	57	20.1
Year 3	94	33.2
Factors Contributing to Academic Engagement		
Instructional Materials	115	40.6
Student Well-Being	51	18.0
Learning Environment	117	41.3
Quality of Academic Engagement		
Yes	224	79.2
No	59	20.8

Normality Analysis

In SPSS, normality testing determines whether a dataset follows a normal distribution, a crucial assumption for many statistical tests, including those based on parametric methods. In addition, the Skewness and Kurtosis were calculated to help determine the normality of the collected data. In this study, checking the data normality and outliers is essential for parametric analysis. Therefore, a normality test was conducted to determine whether the data were normally distributed, using statistical values. Sekaran and Bougie (2016) affirmed that normality helps measure some levels by obtaining skewness and kurtosis values (± 2). Table 2 shows the results of the Skewness and Kurtosis values examined and analysed in this study. Additionally, the Skewness and Kurtosis of instructional materials, student well-being, learning environment, and academic engagement ranged between ±2. Hence, the results yield that the constructs are normally distributed. As indicated in Table 2, the skewness ranged from -0.287 to -0.425, and the kurtosis ranged from -0.266 to -1.115. The findings proved that this normality testing met the criteria required to ascertain that the data generated are normally distributed.

Table 2
Skewness and Kurtosis Values for all Constructs

Constructs	Final Test (n = 283)	
	Skewness	Kurtosis
Academic Engagement	-0.402	-1.115
Instructional Material	-0.383	-0.949
Students Well-Being	-0.425	-0.266
Learning Environment	-0.287	-0.750

Correlation Analysis

In SPSS, "correlation" refers to a statistical technique that measures the strength and direction of the relationship between two variables, indicating whether they tend to change together, either positively or negatively, and by how much (Kothari, 2019). A correlation coefficient of +1 indicates a perfect positive correlation, while a coefficient of -1 indicates a perfect negative correlation. A value near 0 suggests a weak or no linear relationship. The strength of the relationship is shown by the absolute value of the coefficient, with values closer to 1 (or -1) indicating stronger relationships (Ghauri, Grønhaug & Strange, 2020). Correlation analysis examined the relationship between instructional materials, student well-being, and the learning environment in determining the dependent variable (academic engagement). The correlation analysis provided valuable insights in this study, highlighting the relationships between the independent and dependent variables. First, the correlations of the constructs help examine Pearson's Product-Moment Correlation. The results in Table 3 indicate that the constructs are significantly and positively correlated, confirming initial support for the proposed hypotheses. Correlations among variables such as instructional materials, student well-being, and the learning environment have “strong” and “robust” correlations with academic engagement as the dependent variable. It further demonstrated that a strong relationship between each variable would enhance and promote academic engagement at Ocean University, China.

Table 3
Descriptive Statistics and Correlations for all Constructs

Constructs	Mean	SD	1	2	3	4
1. AE	3.694	0.466	1			
2. IM	3.606	0.492	.**943****	1		
3. SWB	3.849	0.488	.894**	**.751****	1	
4. LE	3.721	0.477	.957**	.934**	.**794****	1

Note: ** significant level at p < 0.01 (2-tailed)
AE: Academic Engagement; IM: Instructional Materials; SWB: Student Well-Being; LE: Learning Environment

Regression Analysis

This study's regression analysis, with an R2 value of 0.71, explained a significant portion of the variability in the dependent variable, while values between 0.30 and 0.70 indicated moderate variability. The analysis of these variables — R, R^2, beta, and significance values — was conducted to assess the impact of instructional materials, student well-being, and the learning environment on student academic engagement at Ocean University, China. The sig value (0.000) was used to evaluate the homogeneity of variance of the data (Sekaran & Bougie, 2016). One of the assumptions of regression is that there should be no multicollinearity among the independent and mediating variables. Both the tolerance and VIF values meet the criteria, which specify that the VIF must be less than 10.0 and the tolerance greater than 0.1 (Rea & Parker, 2014). This regression analysis helps examine and determine the relationship between instructional materials, student well-being, the learning environment, and student academic engagement at Ocean University of China.

H_1: Instructional material impacts academic engagement among students at Ocean University, China.

Table 4, shown below, highlights the positive impact of instructional materials on students' academic engagement at Ocean University, China. Instructional materials have a beta value of 0.515, t = 75.573, p < 0.001. This suggests that instructional materials play a significant role in fostering students' academic engagement, thereby exerting a substantial impact that helps students enhance their ability to promote and achieve academic success. The results also showed that the model was considered strong, with an adjusted R-squared value of 0.701, indicating that instructional materials explain 70.1% of the variance in academic engagement. The table further confirmed this significance with p < 0.001. Ultimately, instructional materials were found to be a significant factor in promoting academic engagement as the dependent variable. It also emphasised that the beta coefficient for instructional materials was 0.515, p < 0.001. However, collinearity statistics analysis revealed that instructional materials have a tolerance of 0.128 and a VIF of 7.801, which meet the criteria for tolerance and VIF. According to these standards, the VIF should be below 10.0, and the tolerance above 0.1 (Frederick & Lori-Ann, 2019). Therefore, instructional materials play a significant role in academic engagement. Based on these findings, the researcher affirms that this study meets objective one, as instructional materials helped boost students' academic engagement. Therefore, H1 is accepted. Students believe that implementing quality learning materials can help improve academic performance, including skills like brainstorming, teamwork, and striving for excellence, as reflected in the daily tasks they complete toward academic engagement and success at universities in China (Okwuchukwu, Juliet, Elkenak & Emenike, 2022; Lu & Dang, 2022). The positive impact of instructional materials suggests that students perceive them as strategic tools and additional approaches that enhance their contribution and effort, thereby promoting academic engagement and achievement (Tan, Hans, Lam, & Fah, 2023; Chang, Kim, & Park, 2024). They are viewed as a vital factor that empowers students to enhance their creativity and innovation at the university. Instructional materials support the development of learning skills, creativity, innovation, teamwork, and teaching effectiveness in managing academic activities, which in turn fosters academic engagement (Su, Zang, Yuan, Pan, & Shan, 2024).

H_2: Students' well-being impacts academic engagement among students at Ocean University, China.

The table below highlights the positive impact of student well-being on academic engagement at Ocean University, China. Student well-being has a beta coefficient (β = 0.348), with a t-value of 87. 398, and sig. = 0.000, which is less than p< 0.001. Additionally, student well-being has a significant impact on academic engagement. An adjusted R^2 of 0.745 indicates that academic engagement accounts for 74.5% of the variance, 5% of the variation in student well-being, suggesting a strong model. Student well-being was predicted as the dependent variable. The beta coefficient for student well-being was 0.348, and the p-value was less than 0.001. However, collinearity data showed that student well-being had a tolerance of 0.368 and a VIF of 2.716, meeting the criteria. These criteria require VIF to be less than 10. 0 and tolerance to be greater than 0.1 (Johnson & Clark, 2014; Schindler, 2019). Therefore, student well-being has a significant effect on academic engagement. Consequently, objective 2 of this study has been achieved, and the requirement has been fulfilled. Thus, H 2 is supported. This finding suggests that improving student well-being can help enhance academic engagement.

Students with higher levels of psychological well-being tend to show greater engagement in academic activities (Guo, Kitcharoen, Phukao, & Poopan, 2022). It also helps foster a strong belief in one's ability to succeed academically (self-efficacy), which is a key predictor of engagement. Strong student well-being supports the development of motivation and encouragement. Students are more likely to develop their learning abilities for academic excellence (Cao, Zhang, Li, & Xie, 2024). This study suggests that prioritising student well-being is crucial for fostering academic engagement and success (Jiang & Espeso, 2023). Additionally, it promotes self-compassion, self-efficacy, and motivation, which can significantly influence student engagement, thereby strengthening students' emotional foundation and focusing on learning readiness (Mao, Luo, Wang, Mao, Xie, & Bonaiuto, 2024).
H_3: The learning environment impacts academic engagement among students at Ocean University, China.

The table below focuses on the positive effect of the learning environment on the academic engagement of students at Ocean University, China. The learning environment has a beta coefficient ($\beta = 0.200$; $t = 2.73296$, $p < 0.05$). = 0.000, which is less than ($p<0.001$). In addition, developing a learning environment has helped boost students' learning capability, nurture classroom activities and outdoor learning, and promote online learning platforms, leading to stronger academic engagement among students. According to the data, the model performed well, with an adjusted R-squared value of 0.712, indicating that their academic engagement explains 71.2% of the variation in students' learning environment. In conclusion, the learning environment was found to predict academic engagement as the dependent variable. The results showed that the beta coefficient for the learning environment was 0.200, and the p-value was less than 0.001. Collinearity statistics study showed a substantial learning environment with a tolerance of 0.109 and a VIF of 9.206, meeting the tolerance and VIF criteria (Mukesh, Salim & Ramayah, 2020). Hence, the learning environment has a significant impact on students' academic engagement. Therefore, this result concludes that objective three has been met, as it affirms that a learning environment has a strong influence on academic engagement. Hence, the researcher accepted the **H_3**. Students perceived and agreed that improving the conducive learning environment would add value to their academic struggles, harness their social and conducive climate, boost the curriculum and instruction, nurture their teamwork, collaboration of ideas and knowledge, and create an innovative path for students to nurture and improve, which would drastically promote their academic engagement (Qiu, Ni & Yang, 2023; Lv, 2024). The positive effect of a learning environment signifies that students believe they are more likely to articulate their reading and learning and capture their mindset in online and informal learning in readiness for examination when there is an adequate and conducive environment, which reflects the accomplishment made towards harnessing the academic engagement of students (Dai, Xiong, Zhao & Zhu, 2023; Xiao & Han, 2024).

Table 4
Regression Analysis

Model		Standardised Coefficients	t	Sig.	Model Summary		Collinearity Statistics	
		Beta			R	R^2	Tolerance	VIF
1	(Constant)		-7.292	0.000				
	Instructional Materials	0.362	21.573	0.000	0.782	0.701	0.128	7.801
	Student Well-Being	0.348	17.398	0.000	0.716	0.745	0.368	2.716
	Learning Environment	0.200	27.2962	0.000	0.701	0.712	0.109	9.206

a. Dependent Variable: Academic Engagement

Discussion

Hypothesis 1: Instructional material impacts academic engagement among students at Ocean University, China

Objective 1 of this study revealed that instructional materials have a positive effect on the academic engagement of students at Ocean University, China. Instructional materials have a beta value of 0.515, $t = 75.573$, $p < 0.001$. This finding concluded that instructional materials contributed significantly to the development of students' academic engagement, thereby having a substantial impact on their academic engagement, which helped students increase their ability to promote and achieve academic success. However, the collinearity statistics analysis confirmed that the instructional materials have a tolerance of 0.128 and a VIF of 7.801, which meet the tolerance and VIF values criteria. According to these criteria, the value of VIF must be lower than 10.0, and the value of tolerance must be greater than 0.1 (Frederick & Lori-Ann, 2019). Based on the findings above, the researcher confirms that this study fulfils objective one, as instructional materials helped increase students' academic engagement. Therefore, H1 is accepted. The positive impact of instructional materials suggests that students perceive them as strategic tools and supplementary approaches that enhance their contribution and effort in promoting academic engagement and success (Tan, Hans, Lam, & Fah, 2023; Chang, Kim, & Park, 2024). They are regarded as vital factors that empower students to enhance their creativity and innovation at the university. Instructional materials support the development of learning abilities, creativity, innovation, teamwork, and teaching effectiveness in managing academic activities, which fosters academic engagement (Su, Zang, Yuan, Pan, & Shan, 2024). The role of teaching materials in shaping instructional methods has been a long-standing focus in educational research. Ashraf et al. (2022) highlighted the potential of curriculum materials as key agents in enhancing classroom instruction, arguing that well-designed materials enable teachers to make informed instructional decisions and adapt to the diverse needs of learners. While previous research has examined the overall impact of teaching materials, fewer studies have investigated their role in teacher development at different career stages. Wu (2024) further distinguished between novice and experienced teachers, emphasising how seasoned educators internalise planning processes and rely less on structured materials compared to early-career teachers, who depend more on externally prepared resources for lesson planning and instruction. Well-chosen materials can clarify complex ideas, simplify difficult topics, and offer multiple representations of information, making it easier for students to understand and remember new concepts.

Instructional materials accommodate different learning styles, including visual, auditory, and kinesthetic, ensuring all students have access to information in ways that suit them (Wu, 2024). Additionally, they enable real-world applications. Materials that incorporate real-world examples, case studies, and practical applications help students connect theoretical knowledge to everyday situations, increasing relevance and improving academic performance (Tan et al., 2023). Moreover, instructional materials foster critical thinking skills. Well-designed materials challenge students with problems, encourage the analysis and synthesis of information, and promote higher-order thinking, thereby enhancing academic performance (Chang et al., 2024). In conclusion, instructional materials support differentiated instruction. They enable educators to tailor instruction to meet the diverse needs and abilities of students, providing opportunities for remediation, enrichment, and personalised learning experiences that contribute to improved academic engagement outcomes.

Hypothesis 2: Student well-being impacts academic engagement among students at Ocean University, China

Objective 2 of this study revealed that the positive effect of student well-being on the academic engagement of students at Ocean University, China. Student well-being has a beta coefficient ($\beta = 0.348$), $t = 87.398$, and sig. = 0.000, $p<0.001$. Additionally, student well-being has a significant impact on academic engagement. The collinearity data showed that student well-being had a tolerance of 0.368 and a VIF of 2.716, which fits the criterion. These criteria need VIF to be less than 10.0 and tolerance to be larger than 0.1 (Johnson & Clark, 2014; Schindler, 2019). Thus, student well-being affects academic engagement. This finding suggests that student well-being would help increase academic engagement. Students with higher levels of psychological well-being tend to show greater engagement in academic activities (Guo, Kitcharoen, Phukao, & Poopan, 2022). It also helps build a strong belief in one's ability to succeed academically—self-efficacy—which is a strong predictor of engagement. Strong student well-being fosters motivation and support, making students more likely to engage in their learning for academic excellence (Cao, Zhang, Li, & Xie, 2024). This study revealed that prioritising student well-being is crucial for fostering academic engagement and success (Jiang & Espeso, 2023). Additionally, it promotes self-compassion, self-efficacy, and motivation, all of which can significantly boost student engagement and strengthen the emotional foundation for learning readiness (Mao, Luo, Wang, Mao, Xie, & Bonaiuto, 2024). A lack of student well-being can decrease engagement and lead to mental health challenges that negatively affect academic performance (Dong, Hassan, Hassan, Chen, & Guo, 2024). The impact of poor well-being can trigger high anxiety levels that reduce engagement, especially when coupled with low psychological well-being. Students with low self-compassion may struggle with engagement, particularly when feeling overwhelmed or lacking support (Li, 2023). Therefore, promoting student well-being helps develop learning readiness, effective strategies, self-concept, and positive attitudes toward academic engagement (Han & Gao, 2023). Better well-being is linked to improved academic achievement, enhanced mental health, and responsible decision-making, with feelings of connection and engagement motivating students to succeed (Mao et al., 2024). Conversely, students who feel positive about school, experience a sense of belonging, and trust their educators are more likely to stay motivated and actively participate in learning (Jiang & Espeso, 2023). Those with positive well-being are better prepared to face academic challenges and setbacks, demonstrating greater resilience (Cao et al., 2024). Feeling connected to peers and teachers fosters a sense of belonging and support, which can boost

engagement and overall well-being. When students feel good about themselves and their abilities, they are more likely to take academic risks, seek help when needed, and persevere through difficulties (Mao et al., 2024). Research indicates that students with high life satisfaction tend to thrive in a supportive learning environment characterised by motivation, engagement, and a strong sense of belonging—key factors for academic success (Peng et al., 2024). Likewise, optimism, or the expectation of positive outcomes, plays a crucial role in academic performance (Dong et al., 2024). Optimistic students demonstrate resilience, view academic challenges as manageable, and develop effective coping strategies, resulting in less stress and higher engagement (Nie et al., 2024). Conversely, emotions like sadness, anxiety, and depression can hinder academic achievement both directly and indirectly. These feelings can diminish motivation, cognitive function, and attention—all of which are vital for learning (Fu & Tu, 2023; Liu & Fernando, 2023). Ultimately, the relationship between student well-being and academic engagement is mutual and interconnected. Improving one's life positively influences the other, creating a cycle of success and growth in overall well-being.

Hypothesis 3: The learning environment impacts academic engagement among students at Ocean University, China

Objective 3 of this study focused on the positive effect of the learning environment on the academic engagement of students at Ocean University, China. The learning environment has a beta coefficient ($\beta = 0.200$; $t = 2.73296$, $p < 0.05$). = 0.000, which is less than ($p<0.001$). In addition, developing a learning environment has helped boost students' learning capability, nurture classroom activities and outdoor learning, and promote online learning platforms, leading to stronger academic engagement among students. The Collinearity statistics study revealed a substantial learning environment, with a tolerance of 0.109 and a VIF of 9.206, meeting the tolerance and VIF criteria (Mukesh, Salim, & Ramayah, 2020). Hence, the learning environment has a significant impact on students' academic engagement. Students believe that creating a supportive learning environment adds value to their academic efforts, enhances the social and learning climate, improves curriculum and instruction, fosters teamwork, idea-sharing, and knowledge exchange, and creates an innovative pathway for students to develop and improve. This significantly increases their academic engagement (Qiu, Ni & Yang, 2023; Lv, 2024). A positive learning environment indicates that students are more likely to articulate their understanding and mindset in online and informal learning settings, especially when the environment is adequate and supportive, which in turn indicates progress in student engagement (Dai et al., 2023; Xiao & Han, 2024). It is recognised as a vital factor that supports students in achieving their academic goals, necessitating extensive activities and a nurturing environment to help them excel (Li, Tang, & Zheng, 2023). An effective learning environment taps into students' physical and psychological abilities, significantly affecting engagement and success. It also helps manage and enhance their learning skills and capacity for workload management, which in turn reflects their academic involvement (Iqbal et al., 2022; Nie et al., 2024). When students feel safe, supported, and connected to their learning, they are more motivated to engage actively with the material and participate in class. A positive environment, encompassing effective classroom management and strong teacher-student relationships, can have a direct impact on academic achievement (Wang et al., 2023). Supporting environments foster deeper cognitive engagement, where students actively process the material, and emotional engagement, where they experience a sense of belonging. A well-structured learning space encourages collaboration, critical thinking, and the development of social and emotional skills (Zhong,

Wen, & Li, 2023). Positive learning environments promote stronger relationships between teachers and students, which are essential for sustained engagement (Yang, Jiang, & Chen, 2024). When students find the curriculum engaging and relevant, their motivation to learn increases. Studies show a clear link between a supportive learning environment and higher student engagement (Xu et al., 2024). Emotional engagement is particularly affected by the environment, with emotional well-being playing a crucial role in overall participation and learning. Positive environments have been linked to improved academic outcomes, as students who are more engaged tend to achieve better academic results (Zhou et al., 2022). In summary, the learning environment plays a vital role in shaping students' academic engagement. Creating a positive, supportive, and stimulating space helps foster a sense of belonging, motivation, and participation, leading to improved academic performance outcomes.

Conclusion

In this study, the researcher concluded that the relationship between instructional materials, students' well-being, and the learning environment has a positive impact on the academic engagement of students at Ocean University, China. This study concluded that improving instructional materials would help promote the rapidly evolving field for students, potentially transforming various aspects of society, from technology to academic engagement. This study acknowledged that intelligent tutoring has provided customised guidance and support to students, answering questions and offering targeted feedback that nurtures and improves their academic engagement. It further empowered students to seek help whenever needed and encouraged self-directed learning. Additionally, this study concluded that the effective implementation of instructional materials has helped create more interactive and engaging learning experiences by personalising education, providing intelligent tutoring systems, and automating tasks, thus freeing educators' time for more individualised instruction to improve academic engagement among students. Instructional materials have helped create simplified reading materials that are both appropriate and engaging, encouraging learners to become more focused and motivated, significantly improve their understanding, and enhance their academic performance and achievement. and personalised learning experiences to meet the specific needs of students, to improve academic engagement. This study concluded that student well-being contributes to academic engagement among students. It further asserts that enhancing student well-being has helped foster inclusive and supportive environments that address their unique needs and challenges, ultimately boosting their social, emotional, and academic success. This includes providing accessible resources, promoting mental health awareness, and cultivating a sense of belonging within the campus community. This study confirms that student well-being is ensured through physical and digital accessibility to learning environments and resources, creating a welcoming and inclusive environment where students feel valued and respected. It also provides safe and supportive spaces where students can feel secure and access support services, thereby enhancing their academic engagement. This study concluded that the learning environment has facilitated students' progress in a way that enables everyone to participate fully in society, enjoy a decent standard of living, and access resources and opportunities that promote academic engagement. Furthermore, this study found that an effective learning environment has empowered students, ensuring they have equal opportunities and access to various activities and interactions with their peers, both inside and outside the classroom, for effective academic excellence and engagement. This study concluded that a well-designed learning environment

can foster a sense of belonging and encourage active participation, leading to greater student engagement and motivation. Positive learning environments foster a conducive atmosphere for learning, ultimately leading to improved academic performance and enhanced knowledge retention. This study concluded that the learning environment ensures accessibility while providing academic content to all students, regardless of disability, to foster educational excellence and engagement. Additionally, it affirmed that an improved learning environment fosters a campus culture that values diversity, inclusion, and respect for all students, while actively supporting them in developing their social skills, confidence, and advocacy abilities to enhance academic engagement. The study found that implementing a supportive learning environment among students has significantly fostered positive attitudes and understanding toward people with disabilities, opened doors to a broader range of educational and social experiences, and significantly improved the mental and emotional well-being of these students, leading to ongoing enhancements in academic engagement. Ultimately, the study concluded that instructional materials, students' well-being, and the learning environment, particularly in terms of academic engagement, have contributed to the success of students at Ocean University, China. This study is significant in addressing the gap identified in previous studies, while contributing to the body of knowledge and promoting academic engagement at Ocean University in China.

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