

A Guidelines of Development Learning Enthusiasm for First-Year Student's Faculty of Information Engineering at Nanning University

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Abstract

This study aims to explore the relationship between learning enthusiasm and talent cultivation quality, and to propose a guiding scheme for stimulating students' learning enthusiasm and enhancing learning efficiency. The research is conducted through a combination of questionnaire surveys and expert interviews, using 226 students from the 2025 grade in the School of Information Engineering, Nanning University as the sample. It analyzes the current status of their learning enthusiasm from five dimensions: teaching management methods, learning motivation, learning behavior, learning goals, and learning environment. Meanwhile, five teaching management experts are invited to provide suggestions for improvement based on the aforementioned dimensions. The study found that students' overall learning enthusiasm is at a high level, with mean values ranging from 4.10 to 4.14 across various dimensions, among which learning environment and learning objectives scored the highest. Based on expert opinions, the study proposes the following key recommendations: teaching management should promote modularization and project-based learning, emphasizing real-time feedback; learning motivation needs to be achievement-oriented, stimulating intrinsic motivation; learning objectives should be layered and visualized, enhancing execution orientation; learning behavior should cultivate autonomous learning habits through strategic training and collaborative learning; and the learning environment should be built into an intelligent and immersive support ecosystem. The study provides practical references for universities to stimulate students' learning motivation.

Keywords

Learning Enthusiasm, Guidelines of Development Learning Enthusiasm, Teaching Management Methods, Learning Motivation, Learning Behavior, Learning Goals, Learning Environment

1. Introduction

1.1. Research Background

Learning enthusiasm is a core factor influencing the quality of talent development and a key driver of sustainable educational development. Learning enthusiasm not only helps students build a systematic knowledge base and enhance their innovative capabilities, but also has far-reaching significance for the realization of the nation's educational modernization strategy. Therefore, national and local governments, as well as schools, attach great importance to cultivating students' learning motivation and provide solid support through the introduction of relevant policies and systems. The Chinese government report pointed out: Establish support and reward mechanisms to encourage teachers to meet emerging economic and social demands, strengthen curriculum development, textbook compilation, and the dissemination of teaching achievements, and promptly incorporate the latest scientific research findings and advanced corporate technologies into teaching content. Explore the establishment of a teaching management system that accommodates flexible learning, a credit system, and a major-minor system, and gradually expand students' autonomy in choosing majors, courses, and instructors. Promote student-centered learning methods that are heuristic, collaborative, participatory, and seminar-based, strengthening personalized development ([The State Council of the People's Republic of China, 2017](#)).

Local governments and education authorities also attach great importance to the cultivation of students' learning enthusiasm, pointing out that: Mobilizing students' enthusiasm for learning has been listed as a core indicator of undergraduate teaching reform. The autonomous region's finances allocate 240 million yuan annually in special funds to support universities in building smart classrooms and virtual simulation centers to improve the learning environment. The achievement of learning goals and the improvement of learning behaviors are key performance indicators for secondary colleges. ([Guangxi Zhuang Autonomous Region Government, 2021](#)).

Based on the strong advocacy of national and local governments and the demand for talent in the market, developing students' learning enthusiasm is also one of the talent training goals of Nanning University. Nanning University has incorporated "motivating students' learning enthusiasm" into its "Outline of the Teaching Quality Assurance System of Nanning University". Through measures such as the selection of "Excellent Learning Classes," academic early warning and support, and an academic tutoring system, a five-dimensional linkage mechanism has been established, encompassing teaching management, learning objectives, learning environment, learning motivation, and learning behavior. Traditional teaching models have resulted in low classroom activity, a weak integration of research and teaching, and a failure to fully unleash students' learning initiative ([Nanning University, 2017](#)).

However, on July 15, 2025, I selected three teachers from Nanning University to inquire about the current issues with students' learning enthusiasm. From the

interviews, I learned that there are the following problems: the lack of educational resources in Guangxi, and the need to improve the educational model and environment to promote students' comprehensive development. At Nanning University, the collaborative training mechanism of industry education integration and technology integration has not yet been established, and students' learning goals are not strong. The learning environment still needs to be improved, and the overall learning enthusiasm is relatively low in developed areas.

In conclusion, the issue of college students' learning enthusiasm in my country's higher education system has attracted increasing attention. In this context, optimizing curriculum design to stimulate learning interest, stimulate students' internal motivation for learning, and optimize and improve the learning environment is not only an important entry point for deepening educational reform, but also a key measure to cope with talent competition in the knowledge economy era.

Therefore, this study takes first-year students who enrolled in Faculty of Information Engineering in 2025 academic year at Nanning University as a sample to systematically evaluate their current learning enthusiasm and explore ways to develop their learning enthusiasm, providing empirical support for teaching reform in similar institutions.

1.2. Objectives of the Research Study

The study is directed by the following research objectives:

- 1) To study the current state of Learning enthusiasm for first-year student's Faculty of Information Engineering at Nanning University.
- 2) To propose a guidelines of development learning enthusiasm for first-year student's Faculty of Information Engineering at Nanning University.

1.3. Research Questions

- 1) What is the current level of learning enthusiasm among first-year students in the Faculty of Information Engineering at Nanning University?
- 2) What guidelines can be proposed to effectively develop learning enthusiasm among first-year students?

2. Literature Review

2.1. Analysis of the Concept of Learning Enthusiasm

Learning enthusiasm refers to the internal force driven by non-intellectual factors such as learning motivation, interest and attitude in the academic context of students. Zhao & Chen (2022) argue that learning motivation includes both intrinsic motivation (such as interest and autonomy) and extrinsic motivation (such as rewards and recognition). Hou (2023) further points out that learning motivation is a bridge between ideals and beliefs and learning behavior, manifested in students' shift from "I have to learn" to "I want to learn". In summary, learning enthusiasm is manifested as active participation, goal planning, self-monitoring and other behaviors under the satisfaction of autonomy, and is a comprehensive psychological

drive that connects learning goals and behaviors.

2.2. Chinese Students' Learning Enthusiasm

In recent years, scholars both at home and abroad have explored the influencing factors and development paths of college students' learning enthusiasm from multiple perspectives. Studies generally agree that teaching management, learning motivation, learning behavior, learning goals, and the learning environment are the five key dimensions constituting students' learning motivation.

This study examines the current level of learning enthusiasm among students at the School of Information Engineering, Nanning University, Guangxi. These variables are derived from Lu et al.'s (2023) research on the driving forces behind Chinese students' learning enthusiasm. Lu Yajing's research comprehensively explores various aspects influencing students' learning enthusiasm and provides a framework for developing students' learning enthusiasm in Chinese education.

2.2.1. Teaching Management Methods

Teaching management methods refer to a systematic strategic framework that integrates interactive teaching, flexible curriculum design, and technology-enhanced learning, aiming to improve student engagement and learning motivation. These methods emphasize clear feedback, equitable assessment, and convenient teacher support, while maintaining a reasonable workload and up-to-date teaching resources. By combining structured instruction with adaptive policies, these methods construct a closed-loop system that encourages active student participation, personalized learning, and continuous improvement, ultimately optimizing educational outcomes. Zhao, Shi, & Zeng (2022) emphasize the importance of formative assessment and multi-stakeholder participation; Pranawengtias (2022) points out that external incentives and teacher teaching quality have a significant impact on student motivation, and that flexible instructional design, timely feedback mechanisms, and technological support are key to improving student learning engagement.

2.2.2. Learning Motivation

Learning motivation refers to the intrinsic and extrinsic psychological dynamics that drive students to actively, continuously, and enthusiastically participate in learning activities (Zhao & Chen, 2022). It stems not only from learners' intrinsic needs such as curiosity, interest, and self-actualization (Hou, 2023), but is also motivated by external factors such as rewards, social recognition, and career development (Agustina, Wahyudin, & Pratiwi, 2021). Its core characteristics are reflected in students' autonomy and self-regulation abilities—that is, the ability to proactively set learning goals, select appropriate strategies, monitor the learning process, and reflect and adjust, achieving a shift in subjectivity from “I have to learn” to “I want to learn” (Cullen & Oppenheimer, 2024). Learning motivation is not only a key predictor of academic achievement but also an important psychological foundation for promoting lifelong learning and all-round development.

2.2.3. Learning Behavior

Learning behavior is the outward manifestation of learning motivation. It refers to a series of continuous, self-regulated actions that students proactively take to achieve learning goals. It consists of a closed-loop cycle, including “setting specific goals—selecting adaptive strategies—monitoring, reflecting, and adjusting,” emphasizing the shift from passive acceptance to active construction. Its manifestations include sustained focus, collaborative exploration, self-disciplined execution, and digital interaction, which are continuously reinforced through timely feedback and challenging tasks, ultimately forming transferable deep learning habits. [Theobald \(2021\)](#) argues that self-regulated learning behaviors (such as goal setting, process monitoring, and strategy adjustment) are core to improving learning outcomes. In a digital learning environment, students need to possess the abilities of self-directed learning, collaborative inquiry, and resource integration.

2.2.4. Learning Goals

Learning goals refer to the self-regulated, goal-oriented actions students take to achieve academic success, characterized by active participation, rigorous task management, and proactive learning strategies. It involves collaborative interaction, critical reflection, and proactive problem-solving, forming a cyclical process of planning, execution, monitoring, and adjustment. These behaviors—from note-taking and resource finding to time management and practical application—are reinforced through feedback and challenges, thereby cultivating deep and transferable learning habits that link classroom knowledge with practical skills. [Han et al. \(2024\)](#) point out that goals should possess perceptible “usefulness” and “usability”; [Barde et al. \(2025\)](#) emphasize the construction of personalized “learning biographies” to help students form a continuous learning trajectory.

2.2.5. Learning Environment

A learning environment refers to a multidimensional ecosystem encompassing physical infrastructure, technological platforms, academic resources, and socio-cultural atmosphere, all working together to promote student engagement and success. It integrates functional spaces, efficient systems, and supportive networks to create a safe, convenient, and inspiring environment. Through opportunities for practice, institutional values, and responsive design, a dynamic “choice-behavior-outcome” cycle is formed, motivating students to achieve success while balancing individualized support with collective excellence, ultimately fostering autonomous and deep learning abilities. [Zi \(2024\)](#) advocates for building a blended learning environment that integrates online and offline learning; [Qiu et al. \(2024\)](#) emphasize creating a highly supportive and interactive learning atmosphere to reduce learning anxiety and enhance participation.

2.3. Development College Students’ Learning Enthusiasm

The necessity of developing college students’ learning enthusiasm and its multi-dimensional impact on personal development, educational quality, and social progress. Learning enthusiasm is a core variable determining academic performance

(such as depth of knowledge acquisition, efficiency of skill improvement, and academic achievement) and educational quality (Zhao & Chen, 2022; Putri, Hadi, & Izzah, 2021). Students lacking motivation find it difficult to maintain sustained engagement and achieve deep learning. Simultaneously, it is a key catalyst for promoting students' all-round development, stimulating critical thinking, innovation, and self-regulation, and laying the foundation for them to develop lifelong learning habits (Theobald, 2021; Zhao, Shi, & Zeng, 2022). From a broader perspective, in the context of digital education and the popularization of higher education, stimulating learning enthusiasm is key to responding to changes in education models and ensuring the effectiveness of online and blended teaching (Han et al., 2024). It is also a core approach to meeting the needs of society for talent and cultivating innovative talents with comprehensive qualities and a sense of responsibility (Li et al., 2024), ultimately serving the national innovation development strategy and sustainable development goals (Hou, 2023; Lu et al., 2023).

To enhance university students' learning motivation, several reform suggestions are proposed. At the teaching management level, a flexible assessment and self-selection mechanism should be implemented (Cullen & Oppenheimer, 2024), process-based evaluation and immediate feedback based on digital platforms should be strengthened (Zhao, Shi, & Zeng, 2022; Tan & Liu, 2024), and continuous support for teachers' teaching ability development should be provided (Pranawengtias, 2022). Regarding the stimulation of learning motivation, a motivation ecosystem linking personal value and social significance needs to be constructed (Hou, 2023; Zhang et al., 2021), simultaneously stimulating students' intrinsic interest and external sense of responsibility through ideological and political education in courses, industry practice, gamification elements (Duran et al., 2024), and intelligent pedagogical intervention (Su et al., 2024). In guiding learning goals, students should be helped to break down lofty ideals into actionable and monitorable phased tasks (Lu et al., 2023), and their commitment to and sense of achievement should be enhanced by using "learning contracts," "goal-ability" matrices, and digital growth portfolios (Barde et al., 2025). In shaping learning behaviors, students should be systematically cultivated to develop deep learning habits that shift from "passive acceptance" to "active construction" through specialized strategy training (Theobald, 2021), project-based/inquiry-based learning task design (Jiang et al., 2021), and classroom participation incentive systems (Zi, 2024). Finally, in terms of optimizing the learning environment, it is essential to continuously upgrade physical and digital learning spaces (Han et al., 2024), build an integrated learning support center, foster a campus culture that encourages innovation and collaboration (Lu et al., 2023), and deepen the school-enterprise collaboration mechanism (Li et al., 2024; Duran et al., 2024), thereby constructing a comprehensive and supportive learning ecosystem that provides a solid guarantee for the continuous development of learning enthusiasm.

Conceptual framework of the study

Figure 1 is the Conceptual Framework of the study.

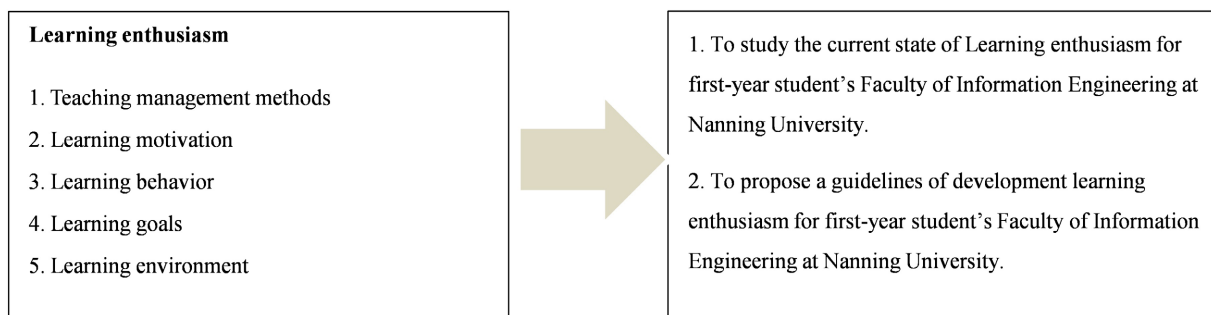


Figure 1. Research framework.

3. Methodology

3.1. Study Design

This study employs both quantitative and qualitative approaches.

The quantitative approach specifically utilizes an ordinal scale with ranked responses to assess learning enthusiasm among first-year students in the Faculty of Information Engineering at Nanning University. A questionnaire survey was conducted via random sampling of 226 first-year students from the Faculty of Information Engineering. A five-point Likert scale was used to evaluate the current state of learning enthusiasm across five dimensions: teaching management methods, learning motivation, learning behavior, learning goals, and learning environment. Each dimension was thoroughly assessed with ten questions to ensure a comprehensive examination of each topic. Firstly, I invited 5 professionals to conduct reliability analysis on the questionnaire. The 5 experts rated each dimension of the questionnaire with scores of +1, 0, and -1, respectively. The IOC values of 50 questions in 5 dimensions were 0.8 to 1.0, both of which were greater than 0.5, indicating that the interview questions designed had passed the validity test and are effective. The questionnaire can be released to students for use. Then, 50 students from previous years were invited to conduct validity analysis on the questionnaire, and the average alpha value was greater than 0.7 (see **Table 1**). It indicates that the students' responses to the questionnaire are valid and can be published and used. The questionnaire was validated for both content validity and reliability.

The qualitative analysis was conducted through interviews with five experts possessing extensive experience in teaching and educational management. We adopt a dual-coding agreement to ensure the validity of interview results. A doctoral student majoring in higher education was invited as a collaborative analyst to randomly select 2 complete transcripts of expert interviews (accounting for 40% of the total text) and independently conduct open coding and topic classification without knowing the researcher's preliminary coding. The percentage of coding consistency between the two individuals is 89.3%, Cohen's $\kappa = 0.82$. For coding nodes with disagreements, the research team will collectively discuss and reach a final consensus. Finally, the insights gathered from these interviews were used to formulate guidelines for developing student learning enthusiasm.

Table 1. Questionnaire reliability checks.

Dimensions (Question)	Cronbach's Alpha
Teaching management methods (1 - 10)	0.820
Learning motivation (11 - 20)	0.805
Learning behavior (21 - 30)	0.814
Learning goals (31 - 40)	0.793
Learning environment (41 - 50)	0.812
Total questions	0.891

Additionally, the “Nanning University Teaching Quality Assurance System” and the “14th Five-Year Plan for the Revitalization and Development of Higher Education in Guangxi” provided specific implementation standards for this assessment.

3.2. Ethical Consent

All first-year student's Faculty of Information Engineering at Nanning University were informed of the purpose of this research and its intended use for the researcher's master's thesis and journal publication. Informed consent was obtained through an online questionnaire. The study's ethical components were examined and authorized by Bansomdejchaopraya Rajabhat University, where the researcher is studying for a master's degree.

3.3. Target Population

550 first-year students who enrolled in Faculty of Information Engineering in 2025 academic year at Nanning University. Based on Krejcie and Morgan sampling table (1970), the sample group of this research was 226 first-year students who enrolled in Faculty of Information Engineering in 2025 academic year at Nanning University. By using stratified random sampling and simple random sampling. Additionally, 5 teachers and counselors with more than 5 years of teaching management or student work experience were invited to participate in the interviews.

3.4. Data Collection and Analysis

Firstly, the questionnaire survey used the self-developed “College Students' Learning Enthusiasm Questionnaire,” distributed via the Questionnaire Star platform. It covered five dimensions: teaching management methods, learning motivation, learning behavior, learning goals, and learning environment, and employed a Likert 5-point scoring scale. The questionnaire underwent expert validity testing (IOC > 0.6) and reliability testing was 0.89. Collected questionnaires were screened as sample data, and invalid responses were excluded prior to analysis. Data analysis employed statistical methods such as frequency, percentage, mean, and standard deviation to understand the distribution of respondents' answers and the overall level of agreement. Based on the Rensis Likert (1932) scale, the interpreta-

tion criteria for mean data are as follows:

- 4.50 - 5.00 refers to the highest level
- 3.50 - 4.49 refers to high level
- 2.50 - 3.49 refers to medium level
- 1.50 - 2.49 refers to low level
- 1.00 - 1.49 refers to the lowest level

Secondly, using qualitative research methods, structured interviews were conducted with five teachers who possess extensive teaching and management experience. Based on these interviews, a series of strategies to effectively enhance students' learning motivation were condensed.

4. Results and Analysis

4.1. Questionnaire Analysis of Learning Enthusiasm

4.1.1. The Analysis Results of the Personal Information of the Respondents

In order to complete the research project, the questionnaire survey was conducted on 550 students from four information majors at Nanning University, and a total of 550 questionnaires were collected. After collecting the questionnaire, the questionnaire data was cleaned and unreasonable data was deleted, such as some students deliberately choosing all 1 or all 5 to complete the questionnaire, or data with significant differences in the results of questions within the same dimension. Finally, a total of 226 valid questionnaire data were obtained. The following data results are all based on the analysis of these 226 data results.

Table 2. Personal information of the first-year students.

Personal Information		Frequency	Percentage
Gender	Male	149	65.93
	Female	77	34.07
	Total	226	100
Major	Internet of Things Engineering major	71	31.42
	Computer Science and Technology major	40	17.70
	Communication Engineering major	45	19.91
	Artificial Intelligence major	70	30.97
	Total	226	100

Table 2 showed that most respondents were 149 males, accounting for 65.93 percent, and 77 females, accounting for 34.07 percent. The major of respondents was mainly Internet of Things Engineering major for 71 people, accounting for 31.42 percent. Followed by Artificial Intelligence major for 70 people, accounting for 30.97 percent. Furthermore, the Communication Engineering major for 45 people, accounting for 19.91 percent. The major with fewest respondent was Computer Science and Technology major for 40 people, accounting for 17.70 percent.

4.1.2. The Analysis Results of the Current Situation of Learning Enthusiasm for First-Year Student's Faculty of Information Engineering

This paper analyzes the current state of learning enthusiasm among first-year students in the Faculty of Information Engineering at Nanning University. The researchers present the data in the form of means (\bar{X}) and standard deviations (S.D.).

Table 3 summarizes the current state of Learning enthusiasm for first-year student's Faculty of Information Engineering at Nanning University in five aspects was at a high level ($\bar{X} = 4.12$, S.D. = 0.27). Considering the results from the highest to the lowest mean were as follows: the highest mean was "Learning Environment" ($\bar{X} = 4.14$, S.D. = 0.37), followed by "Learning Goals" ($\bar{X} = 4.14$, S.D. = 0.38), and the third one is "Learning Behavior" ($\bar{X} = 4.12$, S.D. = 0.35). The fourth one is "Teaching management methods" ($\bar{X} = 4.10$, S.D. = 0.33), "Leaching Motivation" was the lowest mean ($\bar{X} = 4.10$, S.D. = 0.36).

Table 3. Means (\bar{X}). and Standard Deviations (S.D.). of learning enthusiasm among five aspects.

NO	Learning enthusiasm for first-year student's Faculty of Information Engineering at Nanning University	\bar{X}	S.D.	Level	Ranking
1	Teaching management methods	4.10	.33	high	4
2	Learning Motivation	4.10	.36	high	5
3	Learning Behavior	4.12	.35	high	3
4	Learning Goals	4.14	.38	high	2
5	Learning Environment	4.14	.37	high	1
	Total	4.12	.27	high	

High-level performance data ($\bar{X} = 4.12$, S.D. = .27) indicates:

1) Freshman Zeal and Positive Expectation: As new university students, they likely experience a "honeymoon period" characterized by novelty, high expectations, and strong initiative toward their specialized field of study.

2) Strong Professional Identity and Career Outlook: The field of Information Engineering is inherently applied and offers clear, promising career prospects. This alignment between intrinsic interest and extrinsic career incentives provides a powerful dual driver for engagement.

3) Effective Foundational Teaching Support: High ratings for interactive teaching methods, supportive management systems, and clear feedback indicate that the faculty has established a robust pedagogical framework that effectively supports student learning.

4) Active Learning Behaviors and Clear Goal Orientation: Students report strong practical application of knowledge, active class participation, and responsible task completion. Coupled with a clear sense of purpose and adaptability, this suggests

a virtuous cycle where teaching support enables personal effort, which in turn leads to goal achievement.

5) Supportive Physical and Resource Environment: High satisfaction with classroom facilities, campus safety, and learning resources provides a crucial material and psychological foundation that facilitates focused study.

Although the overall scores are high, variations within each dimension highlight specific strengths and pinpoint areas for targeted improvement. For example, in Teaching Management Methods, the Highest Item is Interactive & Engaging Teaching Methods, because the instructors likely employ student-centered pedagogies such as case studies, group projects, and interactive discussions, which align well with the new generation's preference for participatory and experiential learning. But the lowest Item is Effective Use of Technology to Enhance Learning, because the technology integration may be superficial (e.g., primarily for presentations) rather than transformative. There might be a gap in leveraging educational technology for innovative learning (e.g., virtual simulations, coding tools, collaborative online platforms), indicating a need for enhanced faculty training or support in this area, and so on.

For different majors (see **Table 4**), based on descriptive statistical results, students from the four majors are at a relatively high level in all dimensions of learning enthusiasm (total mean 4.10 - 4.14), with the highest scores in learning environment and learning objectives, and the lowest scores in learning motivation, indicating that freshmen have a higher recognition of external support systems than internal driving forces. Comparison between majors shows that the learning motivation score of Communication Engineering major (4.040) is the lowest among all professional dimension combinations, while Computer Science and Technology major ranks last in both learning environment (4.068) and learning objectives (4.093), but its learning motivation score (4.150) is the highest among all majors, presenting a contrasting feature of "high willingness, low support"; The scores of IoT engineering and artificial intelligence majors in various dimensions are balanced and relatively stable. The above trend suggests that if the subsequent analysis of variance confirms significant differences, the guidelines should focus on strengthening motivation interventions for communication engineering majors, optimizing environmental support and goal guidance for computer majors, and integrating universal strategies for learning motivation stimulation for all students.

Table 4. Data analysis of different Majors.

Major		Teaching management methods	Learning Motivation	Learning Behavior	Learning Goals	Learning Environment
Internet of Things Engineering major	\bar{X}	4.1042	4.0958	4.1239	4.1606	4.1239
	N	71	71	71	71	71
	S.D.	.33185	.33782	.34036	.35556	.37472

Continued

Computer Science and Technology major	\bar{X}	4.1000	4.1500	4.0850	4.0925	4.0675
	N	40	40	40	40	40
	S.D.	.32502	.33589	.38601	.38590	.38656
Communication Engineering major	\bar{X}	4.1422	4.0400	4.1267	4.1267	4.1622
	N	45	45	45	45	45
	S.D.	.33743	.40023	.37923	.42179	.33323
Artificial Intelligence major	\bar{X}	4.0843	4.1243	4.1400	4.1614	4.1900
	N	70	70	70	70	70
	S.D.	.34668	.37395	.33206	.38232	.38113
Total	\bar{X}	4.1049	4.1031	4.1226	4.1420	4.1420
	N	226	226	226	226	226
	S.D.	.33483	.36140	.35236	.38140	.37113

4.2. The Analysis Results of Interview Data about the Guidelines of Development Learning Enthusiasm

This study conducted structured interviews with five teachers possessing extensive experience in both teaching and management. The interviews were centered around the five dimensions of “Teaching management methods,” “Learning motivation,” “Learning goals,” “Learning behavior,” and “Learning environment”, ultimately yielding a total of 25 core recommendations.

The experts pointed out that teaching management should transition towards modularization and project-based approaches, emphasizing real-time feedback and flexible evaluation; learning motivation should focus on achievement-oriented learning, stimulating intrinsic motivation; learning goals should be implemented in a hierarchical manner and visualized, enhancing execution orientation; learning behavior should cultivate autonomous habits through strategic training, collaborative learning, and data feedback; and the learning environment should integrate smart facilities, online platforms, and diverse interactions to create an immersive support ecosystem.

4.3. Discussion

Learning enthusiasm, as a core factor in talent cultivation quality and a key driver of educational sustainable development, holds profound significance for building students’ knowledge systems, fostering innovative capabilities, and advancing the national strategy for educational modernization. To this end, both the national and local governments have reinforced the cultivation of students’ learning motivation through policy guidance and resource investments, such as special funds for supporting smart classroom construction (The State Council of the People’s Republic of China, 2017; Guangxi Zhuang Autonomous Region Government, 2021). Nanning University has incorporated “stimulating students’ learning en-

thusiasm” into its teaching quality assurance system, establishing a multi-dimensional linkage mechanism (Nanning University, 2017). However, field research reveals persistent challenges, including insufficient educational resources, rigid teaching models, ambiguous learning goals, and a lack of industry-academia integration mechanisms, leading to an overall low level of student learning enthusiasm. Therefore, optimizing curriculum design, enhancing intrinsic motivation, and improving the learning environment have become critical pathways for deepening educational reform and addressing talent competition.

This study employs quantitative methods to assess the overall learning enthusiasm of first-year students in the Faculty of Information Engineering at Nanning University. A Likert 5-point scale questionnaire in Chinese was developed to evaluate competencies in five areas: teaching management methods, learning motivation, learning behavior, learning goals, and learning environment. The questionnaire was designed based on the “Nanning University Teaching Quality Assurance System” and the “14th Five-Year Plan for the Revitalization and Development of Higher Education in Guangxi,” with each dimension comprising 10 items. Using simple random sampling, 226 students were selected as the sample from the total population of 550 first-year students in the Faculty of Information Engineering. The results indicate that the overall learning enthusiasm is at a high level ($\bar{X} = 4.12$, S.D. = .27). The following discussion will analyze the findings from the five dimensions in conjunction with literature and data.

The learning environment scored the highest ($\bar{X} = 4.14$, S.D. = .37), particularly excelling in areas such as “classroom facilities” and “campus safety,” indicating sufficient investment in hardware facilities and basic support. However, the “Student usually feel the online learning platforms (if used) are user-friendly and reliable” score was the lowest ($\bar{X} = 4.02$, S.D. = .85), reflecting that the digital learning environment still needs optimization. Lu et al. (2023) pointed out that a good learning environment should build a supportive ecosystem, including multi-dimensional support such as physical facilities, technology platforms, and campus culture. Barde et al. (2025) further emphasized that the environment should provide a closed-loop feedback of “choice-behavior-outcome” to enhance students’ autonomy and participation. Nanning University performed well in terms of the physical environment, but still needs to strengthen its digital and platform integration.

The average score for the learning goals dimension ($\bar{X} = 4.14$, S.D. = .38) ranked second, indicating that students have a relatively clear goal orientation. However, the score for “Student regularly assess our progress toward our goals” was the lowest ($\bar{X} = 4.14$, S.D. = .83), indicating that students have shortcomings in goal execution and self-monitoring. Zhang, Shi, & Zhou (2021) proposed that learning objectives should be hierarchical, taking into account both personal development and social contribution, forming a goal system of “self-improvement - knowledge and skills - social contribution”. Han et al. (2024) also emphasized that in digital learning, students need to clearly perceive the usefulness and ease of use of learning tools in order to maintain continuous engagement. Although Nanning University students performed well in goal setting, they lacked a systematic goal

tracking and adjustment mechanism.

The average score for learning behavior ($\bar{X} = 4.12$, S.D. = .35) is above average, with the highest score for “Student usually feel apply what I learn in class to real-world problems or projects” ($\bar{X} = 4.23$, S.D. = .80) indicating a strong practical inclination among students. Shi & Liu (2022) pointed out that positive learning behaviors (such as active inquiry and collaborative learning) are key to translating motivation into academic performance. Theobald (2021) further emphasized that self-regulated learning behaviors (such as goal setting and process monitoring) can significantly improve academic performance. Students at Nanning University demonstrated positive performance in project-based learning and practical applications, but there is still room for improvement in basic learning behaviors such as note-taking and time management.

The average score for teaching management methods ($\bar{X} = 4.10$, S.D. = .33) ranked fourth among the five dimensions, indicating room for improvement. Students rated “Instructors use technology effectively to enhance learning” the lowest ($\bar{X} = 4.05$, S.D. = .81), reflecting insufficient technology integration. This aligns with Pranawengtias (2022) research, which suggests that external incentives and technological support are crucial for motivating students. Furthermore, Zhao, Shi, & Zeng (2022) pointed out that the core of teaching management lies in forming a closed-loop system through flexible instructional design and real-time feedback to enhance students’ sense of participation and control. Although Nanning University has established a five-dimensional linkage mechanism in its teaching management system (Nanning University, 2017), there is still room for improvement in technology application and feedback timeliness.

The mean score for learning motivation was the lowest ($\bar{X} = 4.10$, S.D. = .36), with the lowest score for “Student usually motivated by the support and encouragement of my peers” ($\bar{X} = 4.00$, S.D. = .80). This is similar to the findings of Agustina, Wahyudin, & Pratiwi (2021), which suggest that extrinsic motivation (such as peer encouragement) may not have a significant direct effect on learning behavior, but it can create a synergistic effect when combined with intrinsic motivation. Hou (2023) emphasizes that learning motivation is a bridge between ideals and beliefs and learning behavior; if students lack intrinsic value identification, it is difficult to form lasting motivation. Although Nanning University students showed interest in course content and career prospects, there is still room for improvement in peer interaction and social norm motivation.

4.4. Implications of the Study

By studying the current state of learning enthusiasm among first-year students in the Faculty of Information Engineering at Nanning University and proposing methods to enhance it, this research holds significant importance.

4.4.1. Promoting Students’ Comprehensive Development and Lifelong Learning Abilities

Through the development of scientific guidelines for fostering learning enthusi-

asm, students' intrinsic motivation can be effectively stimulated. This helps them establish clear learning goals, cultivate positive learning behaviors, and enhance their abilities in self-directed learning and self-management. Not only does this contribute to improving students' academic performance, but it also lays a solid foundation for their future career development and lifelong learning.

4.4.2. Advancing Teaching Reforms and Teachers' Professional Growth

The teaching management methods, classroom interaction strategies, and diversified evaluation systems proposed in the study can help teachers optimize their teaching models, increase classroom engagement, and facilitate the transition to student-centered teaching. At the same time, it provides teachers with new pathways for professional development, fostering mutual growth in teaching and learning and enhancing overall educational quality.

4.4.3. Serving Talent Development in Higher Education and Social Needs

The study aligns with the national strategy for educational modernization and local industrial development demands, emphasizing the cultivation of students' innovative spirit, practical skills, and comprehensive qualities. By improving the learning environment, strengthening university-industry collaboration, and establishing a collaborative mechanism involving students, teachers, and enterprises, it helps enhance the social adaptability and competitiveness of talent cultivated by higher education institutions. This supports regional economic development by providing high-quality applied professionals.

This research not only offers direct guidance for individual student growth and the improvement of teachers' instructional practices but also holds significant practical value for the reform of higher education teaching, the enhancement of talent cultivation quality, and the contribution of education to social development.

5. Conclusion and Recommendations

Through a questionnaire survey, this study aims to explore the current status of learning enthusiasm among first-year students in the School of Information Engineering, Nanning University. Through interviews with teaching administrators, effective suggestions are collected to construct corresponding development guidelines. The survey results indicate that the overall learning enthusiasm of first-year students is at a relatively high level ($\bar{X} = 4.12$), with the learning environment ($\bar{X} = 4.14$) and learning goals ($\bar{X} = 4.14$) receiving the highest ratings. This suggests that the university's hardware facilities and basic support are relatively well-developed, and students possess a certain degree of goal orientation. However, learning motivation ($\bar{X} = 4.10$) and teaching management methods ($\bar{X} = 4.10$) scored relatively lower, particularly in areas such as "peer encouragement," "technology-assisted teaching," and "usability of online platforms," reflecting notable shortcomings in intrinsic drive and teaching interactivity that still need strengthening.

5.1. Recommendations

Based on the analysis of the current situation, the study proposes specific measures across five dimensions—teaching management, learning motivation, learning goals, learning behavior, and learning environment—to develop university students' learning enthusiasm, ensure the quality of undergraduate education, and promote comprehensive student development.

In teaching management methods, teachers should promote the transformation of teaching models towards modularity and project-based approaches, establish real-time feedback mechanisms, implement flexible and diverse evaluation systems, regularly conduct teacher training on teaching abilities, and build an information-based teaching management platform to enhance classroom interaction, timely feedback, and teaching adaptability.

In learning motivation, teachers need to strengthen students' career orientation and industry connections, establish a learning achievement certification mechanism, and create a positive atmosphere through role model education and peer motivation. At the same time, incorporating gamification elements into the curriculum and providing personalized goal setting guidance to enhance students' intrinsic motivation and sense of achievement.

In learning goals, teachers should assist students in deconstructing long-term aspirations into short-term, executable milestones; establish a “goal-competency” correspondence matrix to visualize the linkage between learning tasks and capability development; guide students in signing individual “learning contracts” to formalize commitment; embed career planning consultations into academic advising; and provide a platform for showcasing goal achievements. These measures aim to strengthen students' sense of purpose and their capacity for goal pursuit and self-monitoring.

In learning behavior, teachers should organize strategy-training workshops to equip students with effective study techniques; establish a peer-assisted learning mechanism to foster collaboration; implement a points-based system to reward sustained classroom participation; deliver personalized feedback derived from learning behavior analytics; and schedule regular project-based learning weeks. These interventions are designed to cultivate students' habits of active engagement, cooperative inquiry, and reflective practice.

In learning environment, school administrators and teachers should actively participate in optimizing smart classrooms and laboratory facilities, promoting the construction of one-stop learning support centers, creating an innovative and shared campus culture, strengthening the construction of online learning platforms, establishing a tripartite communication mechanism among teachers, students, and enterprises, and providing students with comprehensive and immersive learning support.

5.2. Limitations and Further Studies

Although this study focused specifically on first-year students in a particular ma-

for within the Faculty of Information Engineering at Nanning University, offering a certain degree of representativeness and specificity, it still presents the following limitations: the sample is confined to a single faculty and grade level, and only includes the 2025 cohort of freshmen. As a result, the findings may be influenced by the unique characteristics of this group (such as their adjustment period to a new environment and the homogeneity of their academic choices) as well as the timing of the survey, thereby limiting the generalizability and stability of the conclusions. Future research could expand in the following directions: broadening the scope of participants to include different grade levels, various types of academic disciplines (such as humanities and foundational sciences), and institutions of different tiers (e.g., research-oriented versus vocational universities) to enable cross-group comparisons; conducting longitudinal studies to analyze the dynamic trajectory of learning enthusiasm across the four-year university experience; and incorporating qualitative methods (such as learning journals or classroom observations) to delve deeper into the underlying mechanisms influencing learning enthusiasm (such as family background, peer networks, and teacher interaction patterns), thereby constructing a more comprehensive and adaptable intervention model for developing learning enthusiasm.

Author(s) Contributions

Conceptualization, Li Mengru; Methodology, Li Mengru; Software and Validation, Li Mengru and Savitri Chitbanchong; Formal analysis, Li Mengru; Investigation, Savitri Chitbanchong; Writing—original draft preparation, Nuttamon Puchatree; Writing Review and Editing, Savitri Chitbanchong; Supervision, Man Klaysuwan; Project administration, Man Klaysuwan; Funding Acquisition, Nuttamon Puchatree and Savitri Chitbanchong. All authors have read and agreed to the published version of the manuscript.

Ethical Statement

The study's ethical components were examined and authorized by Bansomdejchaopraya Rajabhat University and Nanning University students were informed about the study's objectives and intended usage in the researchers' master's thesis and journal publication. An online questionnaire was implemented to acquire informed consent.

Consent to Participate

As this study involves human subjects, collecting corresponding data about human rights issues is evaluated with informed consent.

Declaration Statement of Generative A.I.

This work's author(s) declared that they did not use any A.I. tools or program/software to draft this paper.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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