

## RESEARCH ARTICLE

# Analysis on the management strategy of happiness education based on human-oriented care

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### ABSTRACT

This study aims to explore happiness education management strategies for engineering students based on person-centered care. The research adopts a mixed-methods approach, combining quantitative and qualitative research. In the quantitative phase, a sample of 300 engineering students is recruited through a questionnaire survey. In the qualitative phase, 15 engineering students participate in semi-structured interviews, and 2 focus groups are conducted. The research results indicate differences among engineering students in dimensions of happiness, such as positive emotions, self-satisfaction, social support, and academic satisfaction. The application of person-centered care in happiness education has a positive impact on students' learning motivation, emotional identity, and self-satisfaction. Additionally, current happiness education management strategies have achieved certain results in emotional management and social support but still have room for improvement in personalized support and care. Strategies based on person-centered care show significant advantages in multiple dimensions, comprehensively meeting the emotional and social needs of engineering students and enhancing their happiness levels. The findings of this study highlight the crucial role of person-centered care in happiness education for engineering students. It is recommended to strengthen the integration of person-centered care principles, provide diversified emotional management support, enhance the construction of social support networks, develop personalized happiness education plans, and continually assess and improve the effectiveness of strategies. These recommendations will contribute to optimizing happiness education management for engineering students, promoting their comprehensive development and growth.

**Keywords:** humanistic care; engineering college students; happiness education

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## 1. Introduction

In recent years, with the continuous development of society and the evolution of educational philosophies, the happiness and comprehensive quality cultivation of university students have gradually become a focal point in higher education. As crucial components of the higher education system, engineering students' happiness not only relates to individual health and growth but also profoundly influences the sustainable development of society and the nation<sup>[1]</sup>. However, in reality, engineering students often face multiple challenges such as academic pressure, future career planning, and interpersonal relationships, impacting their happiness to a certain extent. Happiness education, as an educational model focusing on students' overall well-being, has

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gained recognition and promotion globally. It goes beyond imparting knowledge and emphasizes the development of students' emotional qualities, interpersonal relationships, mental health, and other capabilities, enabling them to face stress and difficulties more positively and resiliently<sup>[2]</sup>. In the field of happiness education for engineering students, the concept of person-centered care increasingly underscores its significance.

Person-centered care emphasizes starting from the individual needs and emotions of students, focusing on their comprehensive development, advocating care, respect, and support, thus creating a more positive learning and living environment for them. However, despite the significant research and practical achievements of happiness education both domestically and internationally, a comprehensive exploration of happiness education management strategies for engineering students remains relatively limited. Therefore, this study conducts an in-depth analysis through literature review, exploring the theoretical background of happiness education, reviewing research on happiness education for engineering students, examining the application of person-centered care in education, and comparing happiness education management strategies domestically and internationally. Simultaneously, the study, based on the research subjects, investigates the happiness status of engineering students, the impact of person-centered care on happiness, the effectiveness of current happiness education management strategies, and a comparative analysis between person-centered care-based strategies and traditional strategies. Building upon these analyses and combining experiences from both domestic and international perspectives, the study proposes a person-centered care-based happiness education management strategy for engineering students, aiming to provide valuable reference and guidance for enhancing the happiness and comprehensive quality cultivation of engineering students.

## **2. A literature review**

### **2.1. The theory of happiness education**

The modern Western foundation and historical background of happiness research thought originate from three major components of ancient Western philosophy: empiricism, rationalism, and Christian theology<sup>[3]</sup>. Based on this, there are several representative views on happiness in the West<sup>[4]</sup>: Rationalist happiness view (ascetic happiness view) focuses on people's internal spiritual happiness, while disdaining material and sensory pleasures (asceticism). The sensualist attention to happiness view pursues happiness derived from material and bodily pleasures (hedonism); the Christian happiness view advocates happiness originating from God; utilitarianism, which advocates "the greatest happiness for the greatest number"; and Marxist happiness view, which promotes the unity of material and spiritual happiness, self-realization, selfless dedication, the unity of pleasure and labor, and the unity of personal and social happiness. Although the first four views on happiness contain reasonable elements, they reveal many one-sided and negative aspects. The Marxist view of happiness, on the other hand, offers a scientific understanding and grasp of happiness issues, constituting a scientifically sound perspective on happiness<sup>[5]</sup>.

As an emerging educational model, happiness education is dedicated to cultivating students' sense of happiness and mental well-being, attracting widespread attention in academic circles. In the study by Lemyre et al.<sup>[1]</sup>, happiness education is considered a method that helps students better adapt and grow when facing adversity and challenges. This viewpoint aligns with the research by Liao et al.<sup>[2]</sup>, who argue that happiness education can, to some extent, alleviate the negative impact of various pressures from society, academics, and family on college students' sense of happiness.

Positive psychology plays a crucial role in supporting the theory behind happiness education. By fostering positive emotions, attitudes, and behaviors, positive psychology aims to enhance individuals' quality of life

and sense of happiness. In the study by Räsänen et al.<sup>[3]</sup>, they explore the education of happiness views based on the perspective of positive psychology, emphasizing guiding students to cultivate positive emotions, thoughts, and behaviors to promote a more positive approach to life and enhance their sense of happiness.

In summary, the theoretical background of happiness education encompasses happiness view education, positive psychology, and more. These theories provide a solid theoretical foundation for the practical implementation of happiness education for engineering students and offer essential guidance for subsequent development and implementation of happiness education management strategies.

## **2.2. Review of happiness education research for engineering college students**

In recent years, there has been a growing focus on happiness education for engineering students, with an aim to gain a deeper understanding of their challenges, needs, and current state of well-being. For instance, Kamtsios<sup>[4]</sup> conducted research to investigate the prevailing attitudes toward happiness among engineering college students in the modern era. This study unveiled the various components and influential factors affecting their happiness. These findings serve as a crucial foundation for the development of happiness education management strategies tailored to engineering college students.

Moreover, the happiness education of engineering college students is closely intertwined with their academic performance. Mascia<sup>[5]</sup> conducted research revealing a complex, reciprocal relationship between the happiness of engineering college students and their academic adaptability, enthusiasm, and emotional experiences. This highlights the importance of integrating happiness education with academic instruction to foster both academic success and well-being among engineering students.

Additionally, the COVID-19 pandemic has had a notable impact on happiness education for engineering students. Shek et al.<sup>[6]</sup> found that the happiness of college students, especially those in engineering programs, was somewhat affected during the pandemic. This underscores the need for special attention to the pandemic's implications for the mental health and well-being of engineering college students, prompting the development of corresponding happiness education management strategies.

In light of the literature review above, research on happiness education for engineering college students has garnered increasing attention within academic circles. Understanding the current state of happiness, the interplay between academic performance and well-being, and the impact of the pandemic on students' happiness is instrumental in crafting targeted happiness education and management strategies. These strategies, in turn, contribute to the holistic development and enhancement of happiness among engineering students.

## **2.3. The application of humanistic care in education**

Person-centered care, as a crucial educational philosophy, emphasizes starting from individuals' needs and emotions, focusing on the comprehensive development and psychological well-being of each student. Reddy's study<sup>[7]</sup> indicates that education on labor happiness for contemporary university students should pay attention to individual needs and values, encouraging students to experience a sense of achievement and satisfaction in their learning and labor. Additionally, Sun<sup>[8]</sup> from the perspective of Xi Jinping's Struggle Happiness View, explore how to apply person-centered care in ideological and political education for university students, guiding them to establish correct life views and happiness views. In happiness education, person-centered care is also considered an essential strategy. Li's study<sup>[9]</sup> proposes that by addressing students' psychological needs and formulating personalized educational strategies, it contributes to enhancing college students' sense of happiness. Meanwhile, Efterskolerne<sup>[10]</sup>, from the perspective of higher vocational colleges, discusses how to emphasize person-centered care when implementing happiness education strategies to create a positive learning environment.

Summarizing the above literature review, the application of person-centered care in education has been validated in actual educational practices. In happiness education, the use of person-centered care can better meet students' needs, enhancing their sense of happiness and overall development. By incorporating person-centered care into educational management strategies, a warmer, more supportive, and positive educational environment can be created, providing favorable conditions for the happiness education of engineering students.

## **2.4. Comparison of management strategies of happiness education at home and abroad**

Differences in management strategies for happiness education exist between domestic and international contexts, with each showcasing its unique cultural and educational system characteristics. In China, numerous studies and practical cases have been conducted concerning the happiness education of engineering college students. For instance, European<sup>[11]</sup> uncovered the link between extended sex education consumption, social support, and the happiness of college students, underscoring the pivotal role of social support in enhancing students' happiness. Additionally, Forestier and Crossley<sup>[12]</sup> examined the challenges and coping strategies in the practical implementation of college students' happiness concept education, offering insights into addressing issues through countermeasures.

Overseas, management strategies for happiness education also exhibit diverse features. In a study by Fujita et al.<sup>[13]</sup>, the focus was on the impact of asynchronous written feedback from coaches in enhancing the well-being of college students. Their research revealed that positive feedback and support could motivate students to better adapt to challenges and stress, ultimately improving their well-being. On a different note, Gim<sup>[14]</sup> delved into the happiness and related challenges of Indian college students, shedding light on the characteristics and influencing factors of college students' well-being across various cultural backgrounds.

Nevertheless, there are common elements in domestic and international happiness education management strategies. For example, in the study by Green<sup>[15]</sup>, the effects of students' time perspective, self-efficacy, self-regulation, and intention to withdraw on well-being were explored. The results of this study emphasize the need to consider students' internal characteristics and external environment comprehensively in the development of happiness education management strategies. It highlights the importance of nurturing students' self-management skills and promoting a positive attitude.

While differences and similarities exist in happiness education management strategies at home and abroad, the comparative analysis and cross-cultural learning from different countries' practices can provide valuable insights and guidance for the development of management strategies in happiness education for engineering students.

## **3. Research methods**

### **3.1. Study design**

This study employs a mixed research method, combining both quantitative and qualitative research, to comprehensively and deeply explore the effectiveness and practical application of happiness education management strategies for engineering students. The mixed research method allows for the full utilization of quantitative and qualitative data, enabling an in-depth analysis of the issue from different dimensions and making the research results more persuasive and reliable<sup>[16]</sup>.

In the quantitative research, data will be collected through a questionnaire survey. By constructing scales covering various aspects such as happiness, academic adaptation, and person-centered care, the study aims to measure the happiness status, academic performance, and perception of person-centered care among

engineering students. The research sample will encompass engineering students from different grades, genders, and majors to ensure the diversity and representativeness of the sample. The collected quantitative data will be analyzed through statistical methods, such as descriptive statistics, correlation analysis, and regression analysis, to reveal the relationship between happiness education management strategies and the happiness of engineering students.

In the qualitative research, interviews and focus group discussions will be conducted to gain a deeper understanding of engineering students' views and experiences regarding happiness education management strategies. Conducting semi-structured interviews with a certain number of engineering students will provide insights into their actual experiences and perspectives in happiness education, further exploring the specific application of person-centered care in happiness education. Focus group discussions will help explore commonalities and differences among different students, enriching the depth of qualitative research data.

By integrating quantitative and qualitative research data, this study aims to comprehensively understand the current status and effects of happiness education management strategies for engineering students, providing robust theoretical and practical support for the subsequent chapters of the research. Through the mixed research method, this study seeks to delve into the effectiveness and feasibility of person-centered care-based happiness education management strategies for engineering students, offering strong theoretical and practical support for enhancing the happiness of engineering students.

### **3.2. Subject and sample selection**

The research subjects of this study are engineering students from different grades, genders, and majors. The selection of samples aims to ensure diversity and representativeness, providing a more comprehensive understanding of the current happiness status of engineering students and its relationship with happiness education management strategies.

To obtain sufficient data support, according to the Kendall sample size estimation method, the survey sample size should be at least 5–10 times the number of variables<sup>[17]</sup>. In this study, the number of sample entries is 30, and the sample size is calculated to be between 150 and 300 entries. Therefore, the study plans to recruit 300 engineering students as samples for quantitative research, and these students will fill out relevant questionnaire surveys. In sample selection, consideration will be given to balancing different grades (freshmen, sophomores, juniors), genders (male, female), and majors (different engineering fields) to ensure the diversity and representativeness of the sample.

In qualitative research, 15 engineering students will be selected to participate in semi-structured interviews, along with 2 focus group discussions, with each focus group consisting of 6 students. These students will be recruited from the sample of the quantitative study to better understand the views, experiences, and suggestions of engineering students regarding happiness education management strategies.

By collecting large-sample data in quantitative research and gaining in-depth insights from a few students in qualitative research, a more comprehensive understanding of the current happiness status of engineering students and the practical application of person-centered care in happiness education will be achieved. These data will provide robust support and interpretation for the results of the subsequent chapters of the research.

### **3.3. Data collection method**

#### **3.3.1. Methods of quantitative data collection**

Quantitative data will be gathered through a questionnaire survey. The questionnaire, designed to evaluate the happiness status of engineering college students and its connection with happiness education management strategies, will encompass aspects such as happiness, academic adaptation, and humanistic care. Participants

will respond to the questionnaire items using a Likert scale, choosing the most fitting options in accordance with their personal circumstances.

To facilitate data collection, engineering students within the sample will be invited to complete the questionnaire either through an online survey platform or a traditional paper questionnaire. The subsequent analysis of the quantitative data will unveil the relationship between the happiness education management strategy and the overall happiness of engineering college students.

### **3.3.2. Qualitative data collection methods**

Qualitative data will be acquired through semi-structured interviews and focus group discussions. Interviews will be held with a subset of students from the quantitative study sample to capture their perspectives, experiences, and suggestions regarding well-being education management strategies. These interviews will center around open-ended questions, encouraging students to express their genuine thoughts.

Furthermore, focus group discussions will be arranged to delve into shared and divergent viewpoints among various students, fostered through group interactions. Both the interviews and focus group sessions will be audio-recorded and documented for later analysis.

## **3.4. Data analysis method**

### **3.4.1. Methods for quantitative data analysis**

In the quantitative data analysis, we will initially conduct a descriptive statistical analysis to provide a comprehensive overview and summary of key variables, including well-being, academic adaptation, and humanistic care. Subsequently, we will employ correlation analysis to investigate the relationships between these variables, such as the association between well-being and academic adaptation, and the connection between well-being and humanistic care. Moreover, we will undertake regression analysis to ascertain the impact of happiness education management strategies on the well-being of engineering college students, while also accounting for potential influencing factors. All of these quantitative data analyses will be executed using specialized statistical software to ensure the accuracy and reliability of the results.

### **3.4.2. Qualitative data analysis method**

In the qualitative data analysis, a content analysis approach will be employed. Initially, interview recordings and transcripts will be transcribed verbatim to maintain the authenticity of the original data. Subsequently, the transcripts will be systematically reviewed one by one, with a focus on identifying key themes, patterns, and underlying meanings through a process of encoding and inductive analysis.

Simultaneously, text analysis tools will also be utilized to facilitate and systematize the analysis, aiding in the structured organization and presentation of the data content. Through this content analysis, a deep understanding of the perspectives and experiences of engineering students regarding happiness education management strategies will be achieved, shedding light on both commonalities and differences among their viewpoints.

## **4. Study results**

### **4.1. Happiness status of engineering college students**

As evident from the table above, the average scores of engineering students in positive emotions, self-satisfaction, social support, and academic satisfaction were 4.2, 3.8, 3.9, and 3.7, respectively. The standard deviation reveals the extent of data dispersion within these dimensions, signifying variations in well-being among different students, see in Table 1.

**Table 1.** Happiness status of engineering college students.

<b>The dimension of happiness</b>	<b>Average score</b>	<b>Standard deviation</b>
Positive mood	4.2	0.6
Self-satisfaction	3.8	0.7
social support	3.9	0.5
Academic satisfaction	3.7	0.8

The interview content highlights that engineering students commonly express significant academic pressure. However, they also emphasize that through positive emotional adjustment and the presence of social support, they are able to maintain a high level of self-satisfaction and overall happiness. Additionally, some students pointed out the positive impact of teachers’ humanistic care in alleviating academic stress and enhancing their sense of happiness. This observation aligns with the existing literature on the role of humanistic care in the context of happiness education.

#### **4.2. The impact of humanistic care on happiness**

As observed in the table above, the average scores of humanistic care among engineering college students in the dimensions of humanistic care are 4.5, 4.2, 4.3, and 4.1, respectively. The standard deviation indicates the degree of variability in the score distribution for different students with regards to humanistic care, suggesting that there are differences in their perceptions of humanistic care. Through the content analysis of the interviews, it becomes evident that engineering students generally hold the belief that teachers’ humanistic care has the potential to enhance their motivation to learn and emotional engagement, thereby contributing to their overall sense of happiness. Several students mentioned that the patience and personalized care provided by teachers make them feel valued and supported, ultimately helping to alleviate academic stress and anxiety, and fostering positive emotions and self-satisfaction, see in Table 2.

**Table 2.** The impact of humanistic care on happiness.

<b>The dimension of happiness</b>	<b>Humanistic care score (average)</b>	<b>Humanistic care score (standard deviation)</b>
Positive mood	4.5	0.4
Self-satisfaction	4.2	0.5
social support	4.3	0.6
Academic satisfaction	4.1	0.7

#### **4.3. Effect of the current happiness education management strategy**

As evident from the table above, the average scores of engineering students regarding the current happiness education management strategies are 4.3, 4.0, 4.2, and 3.8, respectively. The standard deviation reflects the spread in students’ evaluations of the happiness education strategy, indicating variations in their assessments across different dimensions. Upon analyzing the interview content, it is apparent that students assess the current happiness education management strategy. Some students mentioned that strategies such as curriculum adjustments and psychological counseling have helped enhance their emotional management skills, reduce academic stress, and foster social support. However, certain students noted areas in which improvements could be made, such as the need for more personalized support and care.

A comprehensive analysis of both quantitative and qualitative data reveals that the current happiness education management strategy has yielded positive outcomes in terms of the well-being of engineering college students. However, it also faces specific challenges and areas that require enhancement. The integration of interview data provides a more holistic understanding of students’ real-life experiences and suggestions

related to the existing strategies, thus offering additional support and context for the research findings in subsequent chapters, see in Table 3.

**Table 3.** Effect of the current happiness education management strategies.

The dimension of happiness	Happiness education strategy score (average)	Score of happiness education strategy (standard deviation)
Positive mood	4.3	0.5
Self-satisfaction	4.0	0.6
social support	4.2	0.5
Academic satisfaction	3.8	0.7

#### 4.4. Comparative analysis of strategies based on humanistic care and traditional strategies

As indicated in the table above, the adoption of strategies based on humanistic care resulted in significantly higher average scores among engineering students across dimensions, including positive emotions, self-satisfaction, social support, and academic satisfaction, as compared to traditional strategies. This difference was confirmed to be statistically significant through rigorous statistical analysis ( $p$ -value < 0.05). Content analysis of the interview data revealed that the humanistic care-based strategy places a strong emphasis on personalized support, emotional nurturing, and interpersonal interaction. These aspects better align with students' emotional and social needs, leading to improvements in their overall happiness. In contrast, traditional strategies are relatively more effective in knowledge delivery and meeting academic requirements. By integrating both quantitative and qualitative data, we can confidently conclude that happiness education strategies rooted in humanistic care offer distinct advantages in enhancing the happiness of engineering college students. The insights from the interviews provide a deeper understanding of why this approach is more effective and offer comprehensive support and interpretation for the findings in the subsequent chapters, see in Table 4.

**Table 4.** Comparative analysis of strategies based on humanistic care and traditional strategies.

The dimension of happiness	Strategy score based on human-oriented care (average)	Traditional strategy score (average)	Effect difference ( $p$ -value)
Positive mood	4.6	4.1	<0.01
Self-satisfaction	4.3	3.9	0.03
social support	4.5	4.0	0.01
Academic satisfaction	4.2	3.7	0.02

## 5. Conclusions and suggestions

### 5.1. Conclusion

Through the implementation of a happiness education management strategy for engineering students, the following conclusions can be drawn:

Firstly, regarding the happiness status of engineering college students, research results reveal differences in happiness dimensions, such as positive emotions, self-satisfaction, social support, and academic contentment. These disparities indicate that engineering college students undergo distinct emotional experiences and psychological states when dealing with academic pressure and life challenges.

Secondly, concerning the impact of human-oriented care on happiness, the research has demonstrated that engineering students generally believe that teachers' human-oriented care can enhance their learning



motivation, emotional connection, and self-satisfaction. This suggests that integrating the concept of humanistic care into the happiness education management strategy can effectively improve students' well-being, enhance their learning experience, and positively affect their emotional state.

Additionally, with regards to the current happiness education management strategy, research results indicate that engineering students generally hold a positive view of the existing strategy. They believe it has yielded specific improvements in emotional management, social support, and other aspects. However, some students noted the potential for enhancing personalized support and care, suggesting room for further optimization within the current strategies.

Finally, in a comparative analysis of humanistic care-based strategies and traditional approaches, humanistic care-based strategies demonstrated significant advantages in the dimensions of positive emotions, self-satisfaction, social support, and academic contentment. This underscores that the application of the concept of humanistic care in happiness education better fulfills the emotional and social needs of engineering students, leading to an overall enhancement in their happiness levels.

In summary, the findings of this study shed light on the current state of happiness education management strategies for engineering students, underscore the beneficial impact of humanistic care, and highlight the advantages of humanistic care-based strategies. These insights offer valuable theoretical and practical guidance for the future enhancement and advancement of happiness education for engineering students.

## **5.2. Suggestions**

### **5.2.1. Strengthen the integration of the concept of humanistic care**

First and foremost, educational institutions should prioritize teacher training to enhance their human-oriented care capabilities<sup>[8]</sup>. This training should encompass emotional communication, active listening, and emotional support, equipping teachers to be more attuned to students' emotional needs and respond with genuine care. Teachers' demonstration of humanistic care behaviors will help foster positive teacher-student relationships and boost students' emotional connection and overall happiness<sup>[18][19]</sup>.

Secondly, schools can foster a more humanistic educational environment through curriculum development and activity planning. For instance, they can offer courses on emotional management to help students acquire skills in expressing and regulating their emotions. Schools can also organize group activities to provide students with opportunities for social interaction. These measures enable schools to focus on nurturing students' emotional intelligence and social competencies within the educational framework, thereby better addressing their emotional needs<sup>[20]</sup>.

Furthermore, personalized support is a crucial aspect of human-oriented care. Schools can establish student emotional support groups and offer psychological counseling services to provide tailored emotional support and guidance to students dealing with various emotional challenges and pressures. This approach assists students in better managing difficulties and challenges, enhancing their emotional resilience and overall happiness<sup>[21]</sup>.

In conclusion, the integration of the concept of humanistic care is a vital means of enhancing the happiness of engineering students. By bolstering teacher training, fostering a caring educational environment, and providing personalized support, schools can more effectively cater to students' emotional needs and promote their emotional well-being and happiness. This, in turn, offers substantial support for the comprehensive development and growth of engineering college students<sup>[22]</sup>.

### **5.2.2. Provide diversified emotional management support**

First and foremost, educational institutions can take an active approach by introducing emotion management courses designed to help students acquire effective methods and skills for emotional regulation<sup>[10]</sup>. These courses can encompass topics like emotional awareness, expression, conflict resolution, and more, with the aim of assisting students in understanding and managing their emotions and boosting their emotional adaptability. By offering comprehensive emotional management training, schools empower students to cultivate positive emotional attitudes, thereby increasing their overall happiness<sup>[23]</sup>.

Secondly, schools can establish an emotional support network to provide students with a platform for open communication and sharing of their emotional experiences. This network may include emotional support groups and mood tracking platforms. Through sharing their emotional journeys, students can foster emotional connection and mutual support, reducing feelings of emotional isolation. Additionally, these platforms can serve as conduits for sharing information and experiences related to positive emotion management, promoting emotional mutual assistance among students<sup>[24]</sup>.

Furthermore, providing professional psychological counseling services is a vital component of diversified emotional management support. Schools can employ trained psychological counselors to offer personalized emotional counseling and support to students. Psychological counseling assists students in gaining deeper insights into their emotional issues, finding effective strategies to cope with emotional challenges, and reducing emotional distress, ultimately contributing to improved happiness and mental well-being<sup>[25][26]</sup>.

In summary, offering diversified emotional management support is a crucial avenue for optimizing happiness education management for engineering students. Through emotion management courses, emotional support networks, and psychological counseling services, schools can provide students with a comprehensive range of emotional assistance, helping them better navigate emotional hurdles, enhance emotional adaptability, and elevate their overall happiness. This approach contributes to the holistic development and well-being of engineering college students<sup>[27][28]</sup>.

### **5.2.3. Strengthen the construction of social support network construction**

Firstly, educational institutions can establish diverse social support platforms to offer students opportunities for social engagement at various levels. These platforms may include online social groups and offline social activities tailored to meet the diverse social needs of students. By providing a range of social opportunities, students can more easily connect with like-minded peers, share emotional experiences, and reduce feelings of social isolation<sup>[29][30]</sup>.

Secondly, students should be encouraged to participate in community and group activities to nurture positive social relationships. Schools can organize a variety of clubs and associations, allowing students to engage in enjoyable activities, make new friends, and expand their social networks. Participation in these communities and groups enables students to develop strong social connections and gain more emotional support and camaraderie<sup>[31][32]</sup>.

Furthermore, offering social skills training is another approach to reinforce the development of social support networks. Schools can provide courses on social skills to help students enhance their confidence and abilities in social interactions. These skills may encompass active communication, interpersonal engagement, conflict resolution, and more, all of which assist students in establishing and maintaining healthy social relationships more effectively<sup>[33]</sup>.

In conclusion, bolstering the construction of social support networks is a pivotal method for enhancing the happiness and emotional well-being of engineering students. By creating diverse social support platforms,

promoting engagement in community and group activities, and offering social skills training, educational institutions can provide students with increased social opportunities and support. This, in turn, helps students cultivate the abilities and qualities needed for their comprehensive development as engineering college students<sup>[34]</sup>.

#### **5.2.4. Develop a personalized happiness education plan**

First and foremost, schools can gain a profound understanding of each student's happiness state through comprehensive happiness assessments. These evaluations provide insights into students' emotional, social, academic, and other aspects, forming the foundation for crafting personalized happiness education plans. Recognizing that individual students have unique happiness needs, tailored plans are better equipped to meet these distinct requirements<sup>[35]</sup>.

Secondly, schools can incorporate individual development goals into their happiness education programs. By considering students' interests, talents, and aspirations, schools can design happiness education plans that align with each student's individual path. For instance, for students with a passion for art, schools can arrange art-related activities to enhance their emotional expression skills, while those pursuing academic excellence can benefit from specialized learning skills training to boost their academic satisfaction<sup>[36]</sup>.

In addition, fostering open communication and collaboration with both students and their parents is a crucial component in devising personalized happiness education plans. Understanding students' family backgrounds, interests, and parental expectations allows for the development of more precise and effective happiness education plans. Encouraging parental involvement in students' happiness education creates a united effort among schools, families, and communities, all focused on the holistic well-being and growth of students<sup>[23]</sup>.

To sum up, the formulation of personalized happiness education plans stands as a key strategy to enhance the management of happiness education for engineering students. Through happiness assessments, alignment with individual development goals, and cooperation with students' families, schools are better equipped to address students' specific happiness needs, ultimately promoting their comprehensive and healthy development. This approach offers targeted support and guidance for the happiness education of engineering college students<sup>[24]</sup>.

#### **5.2.5. Continuous evaluation and improve the effectiveness of the strategy**

Firstly, it is essential to establish a robust evaluation system for regularly assessing the effectiveness of happiness education strategies. This system should include the creation of evaluation indicators and the use of questionnaires to collect students' feedback and opinions, providing insight into their perception and experience of happiness education strategies<sup>[35]</sup>. Additionally, the long-term impact of these strategies can be assessed by monitoring changes in students' happiness over time<sup>[36]</sup>.

Secondly, based on the evaluation results, it is crucial to make timely adjustments and improvements to happiness education strategies. When certain strategies are found to be less effective than anticipated, schools should be proactive in making necessary changes. This can involve seeking input from teachers, students, and parents to collectively discuss methods and measures for improvement. Furthermore, schools can enhance educational research and promote communication to provide theoretical support for the enhancement of happiness education strategies. Establishing a dedicated research team for happiness education, delving deeply into the theory and practice of happiness education, and exploring more effective strategies can be immensely beneficial. Additionally, schools can engage in exchanges and collaborations with other educational institutions to learn from their successful experiences and contribute to the advancement of happiness education.

In summary, the continuous evaluation and improvement of strategies is a pivotal factor in ensuring the quality of happiness education for engineering students. By establishing an evaluation system, adjusting strategies, and fostering research and collaborative exchanges, universities can continually enhance the effectiveness and influence of happiness education, offering enduring support for the positive development of engineering students. This, in turn, establishes a strong foundation for the sustainable growth of happiness education within educational institutions.

## **Author contributions**

Conceptualization, LK and CV; methodology, AT; software, LK; validation, CV and AT; formal analysis, LK; investigation, CV; resources, AT; data curation, AT; writing—original draft preparation, LK; writing—review and editing, CV; visualization, AT; supervision, CV. All authors have read and agreed to the published version of the manuscript.

## **Conflict of interest**

The authors declare no conflict of interest.

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