

# The Application of the Perma Model in Mental Health Education in Colleges and Universities

Li Lan<sup>1\*</sup>, Chen Cheng<sup>2</sup>, Yang Li<sup>2</sup>

<sup>1</sup>College of Education, Zhejiang Normal University, Jinhua, Zhejiang 321004, China

<sup>2</sup>Hefei Technology College, Hefei, Anhui 230012 China

E-mail: lanie10@163.com

\*Corresponding author

**Keywords:** mental health education (mhe), college students, well-being, perma

**Received:** April 26, 2024

*Rapid advancements in technology affect people's daily lives. These days, several factors (such as college students' complicated mentalities) restrict the quantity of mental health education (MHE) that is taught in universities. University students' psychological conditions could be changed and cultural and ideological ideas can be disseminated more widely using the organized development of MHE programs and education about traditions in colleges and universities. The conventional MHE teaching work at universities has been deeply impacted and transformed due to the progressive advancement of data transmission and distribution innovation, which has had a very substantial and far-reaching effect. This research builds a PERMA model of methodologies and focuses mostly on the MHE of university students. In this approach, "Positive emotion, Engagement, Relationships, Meaning, and Achievements" are used to describe health. Initially, the issues with college students' MHE were listed, and an expansion model for education in institutions was developed. The PERMA techniques for college MHE were developed based on this. Secondly, to efficiently choose and optimize the extendable techniques, a performance evaluation model was proposed. This study's findings support the application of mental health theory to the setting of college students and give a deeper knowledge of the aspects of health education in this demographic. When compared to other existing methods, our proposed method achieved, a better outcome of accuracy (95%), precision (97%), computation time (62), and Error rate (58%). The study's findings contribute to our understanding of the qualities of well-being in this demographic and support the application of well-being theory to undergraduate students.*

*Povzetek: Razvili so optimiziran model PERMA za izobraževanje o duševnem zdravju študentov, ki temelji na pozitivnih čustvih, vključenosti, odnosih, smislu in dosežkih.*

## 1 Introduction

A network model for MHE at universities was established within the context of Internet Plus. It was suggested that by examining the supports and obstacles to the involvement of university students with psychological problems that arise from the inside as well as the outside, the extensible Strategies and Their Performance for Mental Health Education in Colleges fervency between these pupils and their academic adaptation must be settled to overcome the discriminatory attitudes and participation barriers [1]. An examination of the variables linked to this trend that appears to be rising in mental health issues could not identify rather than focusing on familial or socioeconomic shifts, they called attention to the problem of rising school stress and concerns about longer-term employment opportunities and more schooling as potential causes of this trend [2].

Young people are more likely to experience mental health problems than adults at any other stage of their lives; up to 20% of teenagers are estimated to experience a mental disorder. The most common diagnoses are anxiety and depression, and 25% of young people say they have psychiatric issues. Depressive conditions are a major source of illness and disability in young people, and suicide is the third most common cause of death among older teenagers [3]. Teenagers have discovered that depression declines when personal expectations rise and that these standards strongly predict academic accomplishment. However, depression levels rose when expectations were not fulfilled. The idea that improvements are linked to the drive to accomplish, but they also suggest that personality traits like perfectionism may have some role in the unfavourable correlation between performance and mental health [4].

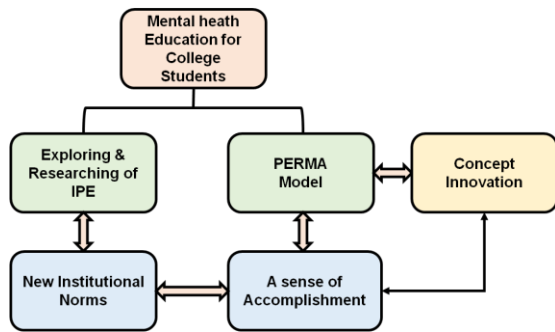


Figure 1: Methodology of Mental health education based on the PERMA model.

According to this perspective, college exams and graduation standards must be carefully supervised student physical education course evaluations must be improved, and students who don't satisfy the requirements must not graduate. The seventh nationwide study on students' physical condition and health has released its findings. According to the research, there is a persistent decline in college students' physical health [5]. Figure 1 represents the methodology of mental health education based on the PERMA model. Mental health education considers local connections rather than the entire state of mental health education in universities, and it doesn't provide comprehensive solutions to the issues with the educational process. It is required to create and put into practice focused extendable tactics to address the flaw. Based on the extension theory and pertinent literature. The adaptable tactics and how well they work for college-level mental health instruction. Key extendable strategy creation and model analysis are the main topics of the study [6]. According to this perspective, college exams and graduation standards must be carefully supervised, student physical education course evaluations must be improved, and students who don't satisfy the requirements must not graduate. The seventh nationwide study on students' physical condition and health has released its findings. According to the research, there is a persistent decline in college students' physical health [7].

While it has had a favorable impact on students' academic performance the cultural ideas it reflects are not suitable for Chinese college students. Human practice provides the basis for the creation of social history, and the culture that develops during practice may result in a collective personality that affects the society's members through the structures of the nation and the state [8]. The collective personality of the community has a subtle impact on every individual, leading to awareness of conformity. The context affects a person's psychological and behavioral characteristics, and people from different cultural backgrounds may have different psychological structures of personality. Culture is shaped by human activity and productivity, but it also changes in response to human development, which explains why people from

different countries, ethnic groups, and even regions have different mentalities, psychological profiles, and moral standards [9]. An overview of the incidence and risk factors for mental health issues among students worldwide, particularly at the undergraduate level. To identify a collection of risk variables as possible targets for intervention, the goal is to: (1) Narratively, synthesize the available data; and (2) estimate the pooled prevalence of mental health issues among students and quantify the impact of related risk factors [10]. Contemporary culture is changing quickly, and new media has transformed educational methods and practices while fostering innovation. It is essential to investigate the problems the PERMA Model has brought about in colleges and universities and to provide workable answers based on the underlying causes. The PERMA Model is useful for broadening the study's perspective on education, seeking new platforms for education, and upgrading educational methods and practices. The approach has also complicated China's cultural norms, which has impacted how Chinese university students are being educated about mental health [11].

### Contribution of the study

This study contributes by showing how the PERMA Model may be used to improve its efficacy by raising students' motivation, curiosity, and awareness of the field's connection to their daily lives. Some of the specific achievements of this study are as follows:

The approach of ideological and political education in Colleges and Universities based on certain applications is examined.

A PERMA model-based efficient learning element is recommended to support the Flexible Approaches and Outcomes for MHE in Colleges and evaluate the efficacy of the methodology.

The research offers a methodical approach to mental health teaching that goes beyond conventional techniques, providing a comprehensive viewpoint.

Through a specific focus on university students' mental health education, the project addresses an important population that frequently encounters particular pressures and problems.

The study's suggested methods have a high accuracy rate. This illustrates that the PERMA model and related methods may effectively identify, diagnose, and treat mental health concerns in college students, improving results and general well-being in learning environments.

## 2 Related works

The Happy Capsule kit was presented by the research to promote learning engagement. It integrates a technology-based instructional technique with the PERMA model of well-being. Happy Capsule is an online educational style assessment that combines five digital tools: Padlet,

Kahoot! Wiki, e-portfolio, and a virtual classroom. It uses Collaborative Action Research to examine the perceptions of fifty first-year college students who utilized Happy Capsule for over 14 weeks of learning [12]. The article evaluated the importance of noting that using the general analysis algorithm to analyze the mental health of pupils in the school system enables a thorough comprehension of scientific data. The piece resulted in the study's findings and the applicability of the used algorithm was examined about the density of information entropy features, which offered a practical means of preventing student mental health issues. Helping the school develop appropriate new techniques for the early detection and treatment of psychological illnesses in college students will foster a positive and healthy environment for their academic and daily lives. The study's findings provide a solid foundation for managing and developing pupils [13]. The study objective implemented the appropriately improved and stopped them from working to high levels of exhaustion at the expense of their physical and mental health [14]. The study reviewed the triangle fuzzy function and entropy weight was utilized to thoroughly assess college students' mental wellness. Actual data from several universities and trials on individual students were used to validate the viability and logic of the suggested strategy [15]. The impression is to examine the growth of students' social adaptation supported by a solid psycho-educational system, and these factors reinforce one another. An effective mental health education has several facets and is long-lasting for the growth of social adaptation. According to students' real circumstances, the article supplied the information needed to create a tailored positive mental health education plan. By doing so, students' overall quality will be improved [16]. The article analyzed the work and outlines the procedures for choosing, purifying, and changing the data from student psychological archives based on the original database. Finally, the article analyzes and projects the system's deployment [17]. The article defined the present status of both national and global studies and offered information on the principles of mental health education. By examining the core ideas of mental well-being effects on learning within the framework of Health and well-being in China, completely using regionalized mental health concepts and putting them into reality, and gathering inspiration for studying Chinese cultural notions of mental health [18]. The research focused on nearly 60% of music instructors who reported that the school's psychological treatment was completely irrelevant and incompetent and offered no practical solutions to their issues. About one-fifth of the instructors believed they would effectively resolve their problems on their own after receiving psychiatric treatment from either institution [19]. The overview's objective reviewed the computer complexity which is decreased during the research procedure to

discover, the results of the study demonstrated that an effective assessment program for the research techniques of children's creative therapy may be created by using the particle swarm optimization (PSO) algorithm to the study of psychological care for preschoolers. [20]. The study established that Student's mental health has improved, and 16.9% fewer kids now have a sub-health mindset. Adolescence is a time when adolescents change from immaturity to maturity. Teenagers are prone to experience many emotions, such as despair, anxiety, rebellion, autism, and others, which will negatively affect the development of adolescents' mental health [21]. The article used a new area of virtual teaching and learning that has emerged in science education because of virtual reality technology. This educational model will have a significant impact on how education develops in the future and how teaching ideas are developed [22]. The research explained that the use of intelligent analytic technologies has energized instructors' instruction and successfully galvanized their teaching initiative. Thus, it is essential to use intelligent analytic technologies. Build a health education system that is focused on and accountable for everyone by integrating health education with moral education, intellectual education, physical education, aesthetic education, and labor education as well as the rest of the educational, teaching, management, and service processes [23]. To achieve this, the research [24] provided the following: a conceptual summary of PERMA+4 as an extensive foundation for performance and well-being at work, a succinct historic synopsis of PERMA's evolution as a flourishing theory, concrete evidence of PERMA+4's benefits, and an itinerary map for more useful organizational studies in psychology. The study focused the study topic is the use of IPE in China's Private Colleges and Universities (PCU) in a network setting. Initially, the study clarifies the meaning of PCU and quickly provides the fundamental theory behind IPE for college students [25]. The article investigated a new media is often an idea put out about conventional media. The review aimed to identify key lines of dispute regarding measurement and technique to shed light on the historical background of these attitudes and suggest methods that positive psychologists should try to counteract them. Five such discussions about fundamental research on well-being were noted and examined [26]. The study paper's goal analyze the use of database technology and decision tree algorithms in support of college mental health work, as well as the use of data mining technologies in college mental health teaching. The research process and the work of mental health in Colleges and universities have been encouraged. The regulation governing the psychological changes experienced by college students has now been condensed [27]. Table 1 depicts the comparison of the literature survey.

Table 1: Literature survey

| Study | Methods   | Findings   | Limitations   |
|-------|---|--|---|
| [28]  | To investigate the features of teenagers treated with mental health treatment in educational and other settings using multinomial logistic regression models based on national-level data from the National Survey on Drug Use and Health, which was conducted from 2012 to 2015. The study also looks at the reasons individuals seek services in different types of therapeutic environments. | The majority of teenagers who seek mental health services do so in non-educational settings, the data reveals that just over one-third of them exclusively got therapy in an educational context. Teens from low-income homes, those with public insurance, and members of racial or ethnic minorities were more likely to get assistance solely in school settings. | Complex connections could be difficult for multinomial logistic regression models to capture. Insufficient information about the kinds and caliber of mental health care received. Possibility of inaccurate or underreported use of mental health services by some demographic groups.   |
| [29]  | Research developed the Happy Capsule, a kit that integrates a well-being PERMA Model into a learning and instruction-based technology approach, to promote student engagement in the classroom.   | Four primary themes surfaced: emotional factors, soft skills, learner engagement, and self-management. PERMA components are successfully implemented in teaching and learning. A favorable effect on zeal, drive, and communication abilities.   | Restricted applicability in environments outside of higher education. More study is required to fully understand how to integrate digital technologies into a variety of teaching and learning settings.  |
| [30]  | The study uses machine learning (ML) methods including Naïve Bayes, logistic regression, decision trees, neural networks, support vector machines, and support vector machines to categorize pupils into a variety of mental health concerns.   | In Malaysia, one in five persons experience depressive disorders, two in five anxieties, and one in ten stress. This essay discusses determining the contributing variables to mental health issues in a subset of college students.   | Counselor shortage is one factor in the problem. A greater amount of data without adequate handling or evaluation.  |
| [31]  | To extract features, deep neural networks (DNN) are employed. To categorize the input data, the deeply integrated support vector machine (DISVM) technique is presented.  | To a certain extent, DISVM increases the stability of the recognition model and boosts the precision of the depression diagnosis. Simulation studies confirm that using Sina Weibo data, the suggested depression detection technique may identify possible depression patients among college students.  | The study uses information gathered from Sina Weibo, which could not accurately reflect all college students. Depending on the caliber and volume of input data gathered from social media sites, the diagnosis of depression may or may not be accurate. The results of the study might not apply to other groups of college students. |
| [32]  | Through the use of big data analysis, observed and assessed the mental health of university students. A model for monitoring and evaluating mental health was developed   | All models aside from the conventional SVM surpassed the 60% accuracy threshold on anxiety. Model 5, which is the best model, has an accuracy of 86.7%. All models on sadness  | The GA-extracted characteristic dimensions are typical. The approach uses feature evaluation of social media activities to rapidly and correctly predict the major emotions of  |

|      |   |   |   |
|------|---|---|---|
|      | using a decision tree (DT) and support vector machine (SVM) after datasets of social media activity from college students were generated. After that, the DT model was trimmed, and a genetic algorithm was used to optimize the model's input data (GA).   | were more accurate than 60% of the time and the DT 5 that had been GA-optimized had an accuracy of 83.1%. The ideal model, or GA-optimized DT 5, achieved an accuracy of 89.5% on droopy spirit, which is similar to the GA-optimized SVM.  | undergraduates at a cheap cost of storing data.   |
| [33] | The Boruta algorithm was employed to identify the important predictors of stress prevalence. Decision tree (DT), random forest (RF), support vector machine (SVM), and LR were used to build the prediction models. Then, k-fold cross-validation, receiver operating characteristics (ROC) curves, and confusion matrix variables were used to assess every forecasting algorithm's performance. | The key indicators that predict the occurrence of stress in students were determined to be their academic background, sleep patterns, systolic and diastolic blood pressure, pulse rate, and smoking status. When compared to other machine learning approaches, particularly each predictor and interaction effects of predictive factors, the RF model performs better overall and predicts stress more accurately. | By enhancing policy-making techniques, promoting mental health, and establishing efficient university counseling services, the machine learning framework can identify important prognostic factors and predict psychological issues more accurately, assisting customers, politicians, and individuals in understanding and averting the grave crisis. |

### 3 Materials and method

Regular assessments of mental health education should be made on university and college campuses to help guide the creation of programs to improve college students' well-being. Hence health education was important for all kinds of people. In this research, we suggested a well-being method called PERMA to educate mental health programs under the concept of positive emotion, engagement, relationships, meaning, and accomplishment. Figure 2 depicts the framework of our proposed study.

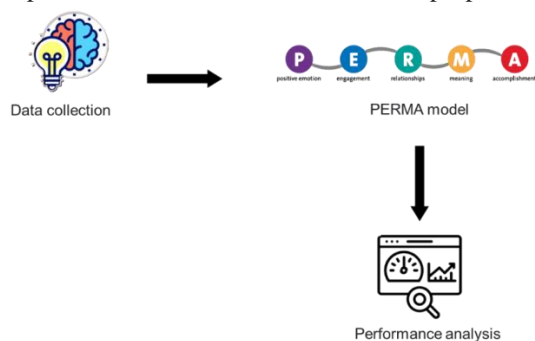


Figure 2: Proposed architecture

#### 3.1 Data collection

Around 43,000 students at a public land grant institution in the Midwest region of China provided the data for this research in 2018. Around 52% of these students were natives of the state, 34% were from other states, and 14% were foreign nationals. The 2018 University SERU survey was administered by the Office of Academic Research, Evaluation, and Effectiveness to gather data for the study of student life at an analysis institution. The study included responses from 5,008 students throughout the Chinese university's colleges. Table 2 represents the information of universities. The following features of the sample were gleaned from identity demographic information: Almost half (57%) identified as female and about half (43%) as male; about 90% (4,507) identified as Chinese citizens and about 10% (501) as foreign students; and around 12% were classified as freshman, 24% as high schoolers, 24% as juniors, and 40% as masters. The average age was 20.44.

Table 2: Information on universities

| College                             | Frequency | %     |
|-------------------------------------|-----------|-------|
| Science                             | 620       | 13.35 |
| Engineering                         | 1445      | 29.82 |
| Health & Human Science              | 805       | 17.03 |
| Agriculture                         | 487       | 9.71  |
| Polytechnic institute               | 495       | 9.84  |
| Pharmacy                            | 134       | 2.65  |
| School of management                | 371       | 8.35  |
| Liberal Arts                        | 385       | 7.66  |
| Education                           | 93        | 1.85  |
| Veterinary technology               | 33        | 0.65  |
| Construction Engineering Management | 14        | 0.31  |

The survey respondents were distributed across various colleges at a public land grant institution, with the College of Engineering being the largest group, comprising 29.82% (1,445 students) of the total respondents. The majority of students in the survey were from Health & Human Science, followed by Science, Agriculture, Polytechnic Institute, and School of Management. The distribution of students was diverse, with smaller proportions from Liberal Arts, Pharmacy, Education, Veterinary Technology, and Construction Engineering Management. This highlights the diversity of academic disciplines among respondents.

## 3.2 Substantial challenges face attempts to improve university students' mental health education

### 3.2.1 Problems with the misalignment of ideas in college mental health programs

The twenty-first century is a time when people learn a lot. As technological advances and science keep getting better, more and more people want a strong social, ethnic, and religious gift, and the most common type of social advancement has tended to focus on people. Because of this, university students' psychological issues get more attention. Traditional ideas about university degrees tend to only concentrate on the concepts and ways of transferring and absorbing knowledge. They don't pay much attention to how scientific knowledge is turned into the whole qualities of college kids. They also don't know how to handle the communication, dialectical unity, and sense of harmony growth of information, abilities, and characteristics in the framework of talents as a whole. Because of this, college students' MHE can't concentrate on individuals, and there are also some limits to how they can learn things like self-belief, identity, self-improvement, self-love, etc., as well as their ethical, independent thinking, physiological, artistic, labor, and other all-around qualities, as well as their creative

thinking, coordination, advancement, and views of the world, values, and growth. Based on how college student's mental health is taught now, it's clear that MHE focuses more on evaluating some surface-level education results and less on understanding how college students act psychologically. This is still practice test education that can't give college students a good education. Therefore, to improve MHE in colleges, college students' ideas about MHE need to be brought to the next level.

### 3.2.2 The inadequate state of mental health instruction at universities

It has been shown via research and analysis that certain college MHE methods are inconsistent generally and have a subpar overall impact. While implementing MHE models, some universities place a lot of emphasis on the various instructional techniques, tools, and technology but often struggle to effectively combine these three. The majority of the time, colleges use a framework of fairly autonomous infused learning, which makes it challenging to reflect the interaction and exchange of MHE for college students as well as to affect their mental emotions and cognition; in other words, the principle of MHE for college students can indeed be reflected. Since university students' MHE is comparatively inadequate for the use of advanced systems, the associated educational platforms or systems were not intelligently developed, making it challenging to keep up with the demands of modern college students. However, the techniques used to educate mental health are often rather limited, and the majority of them involve focused instruction rather than flexible participatory dialogue. Lastly, regular classroom teaching is primarily employed in MHE missing the requisite dynamical, experiential, creative, participatory, and investigation-intelligent methods supported by cutting-edge technology. The success of MHE at universities will be impacted by all of these.

### 3.2.3 Inadequate growth of MHE at universities

Students, educational training objectives, social sector status, environmental shifts, and sophisticated technology advancement are just a few of the areas where a lack of knowledge shows through in college students' MHE. There is a gap in our knowledge of students because standard approaches to college MHE do not adequately account for the variety, complexity, and order of individuals' psychosocial factors. These characteristics of college students should be examined independently from the process of implementing MHE since, as students' cultural needs and religious lives improve, so too does their influence on MHE. Second, since we don't know what we're aiming for in terms of education, we need to make sure that our efforts to train university students in mental health are aligned with the new priorities of higher education, which are to move away from a focus on standardized tests and towards a curriculum that is more

focused on the individual's development. Finally, since the complete quality instruction of university students must vary at various phases of human development, the deployment of college MHE must be coupled with the present social development trend. Fourth, since college students often don't realize the significance of environmental issues, it's important to tailor mental health education to the specific contexts in which they find themselves. Finally, the college MHE has to be in line with the degree of scientific and technical growth, as seen by students' general lack of familiarity with recent advances in advanced technologies. When applied to higher ed, technological and scientific advances have the potential to foster the development of both high representative and positive mental health, creating a virtuous loop in which both are bolstered.

### 3.3.4 College mental health education has a low profile

Colleges that focus primarily on engineering and sciences tend to give mental health education a lower priority than other majors like bachelor of technology, control theory, astronautics, bioengineering, strategic, mechatronics, material sciences, etc., because these fields are dependent on technological advancement and support for their growth. This is why these schools prioritize the development of students' technical knowledge in their chosen fields of study above the promotion of their emotional well-being. College MHE's growth plan lacks a systematic and forward-looking approach to curriculum design, outline building, talent echelon building, management software, etc., making it impossible to guarantee the sector's capacity for long-term success. In addition, there is a great deal of formality in the delivery of MHE at universities. Several schools have begun offering mental health education programs, but they are generally in their infancy and just scratch the surface.

## 3.4 PERMA model

To evaluate mental health as a multifaceted concept in positive education, the PERMA model has been presented as a framework that might appropriately analyze elements treasured by adolescents (e.g., positive emotions and connections) while also harmonizing with current college structures and practices. There is a broad consensus that studies in the field of psychology can and should be utilized to detect and encourage healthy, positive mental characteristics as well as those that are disordered. This expanding conviction shows itself in people's efforts to spread happiness. Psychological, interpersonal, and practical elements all contribute to a person's sense of well-being. Pleasure, good health, satisfaction with life, and thriving are all broad ways to define well-being. This effort to capture "what people want for its own sake" led to a change in the worldview and a wider emphasis on well-being within the area of positive thinking, which had

previously been preoccupied with the idea of happiness. There is evidence that PERMA, a method of the suggested structure blocks of well-being, is indeed indicative of objective health and that the existence of one aspect in a person indicates the presence of additional components. Figure 3 displays the PERMA model structure.

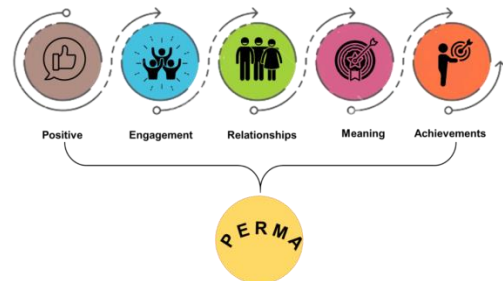


Figure 3: PERMA Model structure

### 3.4.1 Positive emotion

The PERMA model emphasizes that having positive emotions requires positive feelings such as gratitude, affection, joy, and satisfaction just as much as happiness. These temporary good emotions might change over the day depending on our activity and surroundings. It is possible to overcome unpleasant sensations, increase resilience, and be motivated by positive emotions, which balance out negative ones. They urge people to interact with their environment and take up survival-oriented habits. Positive feelings that arise when studying, in our opinion, serve as a reward system that strengthens this activity. Positive reactions naturally mold behavior. Empirical evidence that links pleasant emotional states with improved physical health, including elevated levels of cortisol and blood fibrinogen, highlights the significance of comprehending how positive emotions impact the correlation between education and well-being.

### 3.4.2 Engagement

The PERMA model defines involvement as immersing oneself in an activity, experiencing a sense of timelessness, and being involved in it. Flow is the state that arises when: With defined goals and ongoing feedback, the endeavor is demanding but achievable. The person feels in charge of the work.

- The individual loses themselves completely in the work.
- The individual becomes so engrossed in the work that they lose sight of time.
- Being in a state of flow is beneficial to well-being since it can make one feel incredibly competent and successful.

### 3.4.3 Relationship

Social connections and supportive relationships are essential for well-being. Even after taking into account

socioeconomic and medical considerations, people with good, organic social relationships had a 50% greater probability of surviving over 7.3 years than those without such connections. In a similar vein to quitting smoking, decreasing weight, and boosting physical activity, social relationships might prolong life. Longevity is more strongly correlated with social integration than with social support alone. Thus, promoting unplanned social connections among individuals can have a substantial positive impact on health. According to the cushioning hypothesis, people can be shielded from the negative consequences of stress by having real support networks. Social connections may also encourage people to lead better lifestyles, which increases happiness. However, the difficulties of contemporary living can counteract the positive effects of a strong social network.

#### 3.4.4 Meaning

The two fundamental elements of significance, based on the PERMA paradigm, are a sense of one's worth and one's role in something bigger than oneself. Adult interviewees stated that schooling is important because it enables people to carry out duties and obligations such as those of a caregiver, spouse, or parent. In another qualitative study involving parents and their teenagers, parents stated that education gave them a sense of control in their role as guardians of their child's wellbeing. Adults view education as an opportunity to gain independence and responsibility. As was previously indicated in the Links section, participants in the qualitative research viewed learning as also providing meaning through the opportunity to engage and communicate with others. It's possible that occupational therapy, which tries to increase people's ability to generate and maintain meaningful work, has already drawn attention to the importance of education. Experts in occupational therapy claim that doing meaningful work daily fosters positive emotional development.

#### 3.4.5 Achievements

When goals are accomplished, one has a sense of accomplishment and gains the ability to do daily chores more efficiently. Success motivates people to break free from constraints and reach their full potential, which fosters the creation of creative cultural activities. In addition, having a favorable perspective on one's accomplishments may increase one's feeling of autonomy and hope for the future, both of which increase the pleasure of achievement-related activities. Two viable approaches to achieving this goal are demonstrations of knowledge and competence. As seen by the well-known "IKEA effect," people regard things they produce themselves more highly than they do otherwise equivalent products. In summary, the PERMA literature suggests that happiness cannot be attained just via feelings of well-being since happiness is so elusive. Any endeavor to create meaningful

connections will be undermined by negative feelings, a lack of purpose, and an inability to experience achievement. Maintaining a healthy relationship without making any effort is difficult. Success is hard to come by without the other four components, and living a purposeful life devoid of happy feelings and accomplishments is stupid. There isn't a silver bullet that will ensure happiness as a consequence. They felt that the columns were connected, or at least closely related, and that by working together, they would increase people's enjoyment in general.

## 4 Result and discussion

### 4.1 Parameter chosen for PERMA model

After the PERMA model has been successfully developed, the parameters must be set to fulfill the prediction requirements. The key elements are computing time, accuracy, precision, and error.

### 4.2 Computation time

The amount of time needed to finish an informational operation is known as the "computation time," it is also frequently called the "running time." An arrangement of rule applications can be used to characterize a calculation, and the number of rule modifications will affect how long it takes to complete the calculation. The time used to accomplish a single "quantum parallel" computation in a logic-gate-based quantum algorithm is directly correlated with the number of unitary transformations that are performed. The relation between computation time is seen in Figure 4.

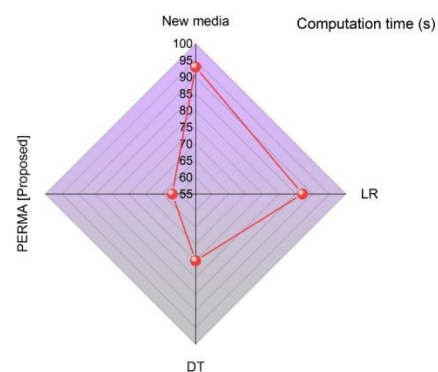


Figure 4: Relation between computation time

In comparison, the suggested method PERMA model achieves 62% computation, while new media achieves 93%, LR has 87% and DT has 75%. It indicates that the strategy that is proposed is more successful than that of others. Table 3 shows the proposed techniques' computation time.



Table 3: Comparison of computation time

| Methods          | Computation time (s) |
|------------------|----------------------|
| New media        | 93                   |
| LR               | 87                   |
| DT               | 75                   |
| PERMA [Proposed] | 62                   |

### 4.3 Accuracy

Figure 5 illustrates the recommended method's accuracy. The degree to which the device's estimates of a quantity are closer to the value that corresponds to that number may be thought of as its accuracy.

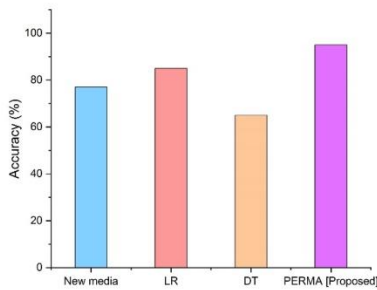


Figure 5: Accuracy

$$Accuracy = (Truepositives + TrueNegatives) / (Truepositives + Truenegatives + Falsepositives + Falsenegatives) = (TP + TN) / (TP + TN + FP + FN) \tag{1}$$

When compared to the strategy that is presently being used, It has been shown that the mental health education for the PERMA model by the suggested technique provides more precise outcomes. A percentage of the total is frequently used to indicate the accuracy level. Indicators are indicating the possibility of imprecise forecasts in both the current and the suggested methodologies. This threat is recognized by each system. The method that has been proposed, however, PERMA achieves 95% accuracy whereas new media, LR, and DT only manage 77%, 85%, and 65% accuracy, respectively. Consequently, the suggested method has the highest accuracy rate. The proposed approach accuracy is shown in Table 4.

Table 4: Comparison of accuracy

| Methods          | Accuracy (%) |
|------------------|--------------|
| New media        | 77           |
| LR               | 85           |
| DT               | 65           |
| PERMA [Proposed] | 95           |

### 4.4 Precision

The proportion of pertinent concepts among recovered examples is known as precision, or its beneficial predictive value. It can suggest that precision is the benchmark for quality. The degree to which identical outcomes are obtained from identical observations made under the same circumstances is known as precision. The variation that occurs when the same method is used repeatedly by various tools and operators is known as reproducibility. Reliability is the variation that happened when the same tools and operator were used and the identical tiny period was allotted for each iteration when every attempt was taken to preserve a technique. Figure 6 shows the precision of the recommended system.

$$Precision = Truepositives / (Truepositives + Falsepositives) = TP / (TP + FP) \tag{2}$$

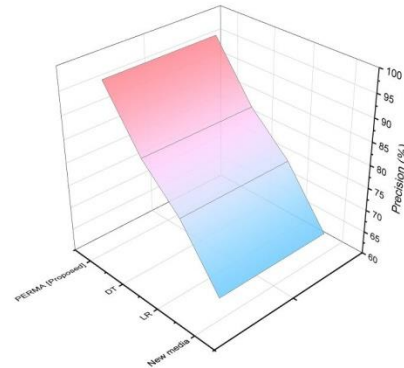


Figure 6: Precision

In observation, the suggested study has higher precision than the current method. The recommended techniques get 97% precision while, new media gets 65%, LR gets only 77%, and DT gets 85%. This is because the present systems have the following amount of risk associated with the accurate forecast. In conclusion, the recommended method has a high degree of performance. The recommended method is shown in Table 5.

Table 5: Comparison of precision

| Methods          | Precision (%) |
|------------------|---------------|
| New media        | 65            |
| LR               | 77            |
| DT               | 85            |
| PERMA [Proposed] | 97            |

### 4.5 Error rate

Survey participants' inaccurate replies might result in a measurement mistake known as a classification error. There is a chance that nominal categorical data will provide both false positive and false negative results. There is a defined method for assessing its efficacy. The instance class has been accurately predicted if the True Positives (TP) / False Negatives (TN) ratio is positive. Making the mistake of classifying instances wrongly (e.g., False Positives (FP) or False Negatives (FN)). Figure 7 displays classification errors for the proposed and existing modalities. Table 6 displays the results of error classification categorizations. This demonstrates that the suggested approach is more precise and has errors.

$$Error = Error/total = FP + FN / TP + TN + FP + FN \tag{3}$$

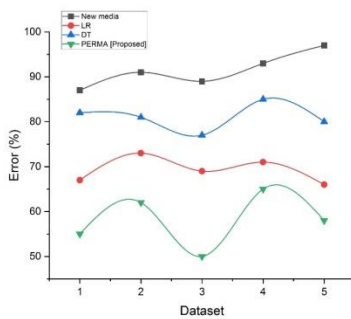


Figure 7: Error rate

Table 6: Result of error rate

| Dataset | Error (%) |    |    |                  |
|---------|-----------|----|----|------------------|
|         | New media | LR | DT | PERMA [Proposed] |
| 1       | 87        | 67 | 82 | 55               |
| 2       | 91        | 73 | 81 | 62               |
| 3       | 89        | 69 | 77 | 50               |
| 4       | 93        | 71 | 85 | 65               |
| 5       | 97        | 66 | 80 | 58               |

### 4.6 Discussion

Rehabilitation counsellors offer assistance to individuals with impairments so they can pursue their goals of mental health and happiness through community and employment-related activity involvement. Similar to this, a key focus of rehabilitation research is figuring out what factors influence these favourable results in individuals with impairments. The identification of positive outcomes predictors in college students with disabilities via rehabilitation research can aid in the development of successful positive psychology therapies that facilitate a smooth transition to college life. Complex correlations and interactions among the numerous factors impacting mental health outcomes could make it difficult for LR to identify.

This limitation could make it more difficult for it to offer a thorough grasp of the complicated nature of mental health. Over-fitting is a common problem with DT, particularly when working with datasets that include many variables or intricate relationships. As a result, models might perform effectively with training information but not successfully on fresh, untested data. Because of its adaptability and flexibility, the PERMA model could be updated to include new factors or variables as our knowledge of mental health changes. When compared to other existing methods, our proposed method achieved, a better outcome of accuracy (95%), precision (97%), computation time (62), and Error rate (58%). The PERMA model recognizes that mental health consequences could vary throughout various cultural contexts and integrates cultural concerns into its framework. The PERMA approach guarantees that mental health education activities are customized to the unique needs and experiences of varied student groups by including cultural considerations. The effectiveness of mental health therapies may be impacted by student individual variables not taken into consideration in the study, such as cultural origins, socioeconomic level, or personal experiences. The findings of this study offer a foundation for future research and practical applications, encouraging a holistic approach to mental health education that can lead to more resilient and thriving student populations.

## 5 Conclusion

This work focuses mostly on researching and modeling the efficacy of scalable approaches to educating college students about mental health. PERMA methods for increasing MHE in colleges and universities were created in addition to compiling a list of problems with the psychological education of college students. Colleges have a crucial socialization role in creating and preserving healthy cultural values and encouraging mental health for today's young. Since most young people spend most of their time in college and universities. Although standardized examinations and student portfolios are often used to evaluate a school's effectiveness in preparing its pupils for maturity, subjective and multidimensional views on well-being are just as instructive. When compared to other existing methods, our proposed method achieved, a better outcome of accuracy (95%), precision (97%), computation time (62), and Error rate (58%). Effectively promoting students' well-being may be facilitated by directly evaluating their subjective opinions of well-being across a variety of categories. Certain problems may enhance the dangers to mental health in general. Colleges and universities need to know how their students are doing emotionally so they may strengthen their programs to meet their needs. The PERMA framework stands out because of the novel way in which it proposes to assess and improve people's and groups' happiness. The results of this

investigation may be used in efforts to improve the quality of life for college pupils.

## Reference

- [1] Gong, K., 2020. Extensible strategies and their performance for mental health education in colleges. *International Journal of Emerging Technologies in Learning* (Online), 15(9), p.205. <https://doi.org/10.3991/ijet.v15i09.14037>
- [2] Andermo, S., Hallgren, M., Nguyen, T.T.D., Jonsson, S., Petersen, S., Friberg, M., Romqvist, A., Stubbs, B. and Elinder, L.S., 2020. School-related physical activity interventions and mental health among children: a systematic review and meta-analysis. *Sports medicine-open*, 6, pp.1-27. <https://doi.org/10.1186/s40798-020-00254-x>
- [3] Aguirre Velasco, A., Cruz, I.S.S., Billings, J., Jimenez, M. and Rowe, S., 2020. What are the barriers, facilitators, and interventions targeting help-seeking behaviors for common mental health problems in adolescents? A systematic review. *BMC Psychiatry*, 20, pp.1-22. <https://doi.org/10.1186/s12888-020-02659-0>
- [4] Turner, J., Roberts, R., Proeve, M. and Chen, J., 2023. Relationship between PERMA and children's wellbeing, resilience, and mental health: A scoping review. *International Journal of Wellbeing*, 13(2). <https://doi.org/10.5502/ijw.v13i2.2515>
- [5] Wang, T. and Park, J., 2021. Design and implementation of an intelligent sports training system for college students' mental health education. *Frontiers in Psychology*, 12, p.634978. <https://doi.org/10.3389/fpsyg.2021.634978>
- [6] Lian, Z., Wallace, B.C. and Fullilove, R.E., 2020. Mental health help-seeking intentions among Chinese international students in the US higher education system: The role of coping self-efficacy, social support, and stigma for seeking psychological help. *Asian American Journal of Psychology*, 11(3), p.147. <https://doi.org/10.1037/aap0000183>
- [7] Rosmarin, D.H. and Koenig, H.G. eds., 2020. *Handbook of spirituality, religion, and mental health*. Academic Press. <https://doi.org/10.1016/c2017-0-04790-0>
- [8] Sheldon, E., Simmonds-Buckley, M., Bone, C., Mascarenhas, T., Chan, N., Wincott, M., Gleeson, H., Sow, K., Hind, D. and Barkham, M., 2021. Prevalence and risk factors for mental health problems in university undergraduate students: A systematic review with meta-analysis. *Journal of affective disorders*, 287, pp.282-292. <https://doi.org/10.1016/j.jad.2021.03.054>
- [9] Chen, B., Sun, J. and Feng, Y., 2020. How have COVID-19 isolation policies affected young people's mental health—Evidence from Chinese college students. *Frontiers in Psychology*, 11, p.1529. <https://doi.org/10.3389/fpsyg.2020.01529>
- [10] Khalid, N.M., Senom, F., Muhamad, A.S., Mansor, N.M.F. and Saleh, N.H., 2023. The Implementation of PERMA Model into Teaching and Learning of Generation Z. *International Journal of Learning, Teaching and Educational Research*, 22(9), pp.423-441. <https://doi.org/10.26803/ijlter.22.9.23>
- [11] Zheng, W., 2022. Cluster analysis algorithm in the analysis of college students' mental health education. *Applied Bionics and Biomechanics*, 2022. <https://doi.org/10.1155/2022/6394707>
- [12] Zhang, H., 2022. Application of psychological contract theory in mental health and professional development of university teachers. *Journal of Environmental and Public Health*, 2022. <https://doi.org/10.1155/2022/6985766>
- [13] Zhang, J., 2021. A study on mental health assessments of college students based on triangular fuzzy function and entropy weight method. *Mathematical Problems in Engineering*, pp.1-8. <https://doi.org/10.1155/2021/6659990>
- [14] Jin, Y., 2022. The promoting effect of mental health education on students' social adaptability: implications for environmental. *Journal of Environmental and Public Health*, 2022. <https://doi.org/10.1155/2022/1607456>
- [15] Chu, Y. and Yin, X., 2021. Data analysis of college students' mental health based on clustering analysis algorithm. *Complexity*, 2021, pp.1-10. <https://doi.org/10.1155/2021/9996146>
- [16] Wang, X. and Gu, M., 2022. The Positioning of Mental Health Education in Social Work under the Healthy China Strategy. *Journal of Environmental and Public Health*, 2022. <https://doi.org/10.1155/2022/4338011>
- [17] Liu, K., 2022. Research on the intervention countermeasures and mental health status of college music teachers from the perspective of positive psychology. *Journal of Healthcare Engineering*, 2022. <https://doi.org/10.1155/2022/9133979>
- [18] Wu, C. and Sang-Yeol, L., 2022. The application of art therapy based on particle swarm optimization method for preschool children's mental health. *Wireless Communications and Mobile Computing*, 2022. <https://doi.org/10.1155/2022/9261191>
- [19] Wang, X., Zhu, X. and Lin, J., 2022. Application of virtual reality technology in adolescent mental health science education. *Wireless Communications and Mobile Computing*, 2022. <https://doi.org/10.1155/2022/8783355>
- [20] Zhu, H., 2023. Exploration and Practice of the Relationship between College Students' Learning Adaptation and Mental Health under the Information-Based Teaching Environment of Potential Profile Analysis. *Journal of Environmental and Public Health*, 2023. <https://doi.org/10.1155/2023/2256741>

- [21]Zhang, Z. and Min, H.J., 2022. Effects of different physical exercises on the physical and mental health of female college students. *Journal of Healthcare Engineering*, 2022. <https://doi.org/10.1155/2022/7812005>
- [22]Donaldson, S.I., van Zyl, L.E. and Donaldson, S.I., 2022. PERMA+ 4: A framework for work-related wellbeing, performance and positive organizational psychology 2.0. *Frontiers in psychology*, 12, p.817244. <https://doi.org/10.3389/fpsyg.2021.817244>
- [23]Xu, L., 2020, October. *Research on problems and countermeasures of contemporary college students' network psychological education and consultation based on a network cloud platform*. In *Journal of Physics: Conference Series* (Vol. 1648, No. 2, p. 022176). IOP Publishing. <https://doi.org/10.1088/1742-6596/1648/2/022176>
- [24]Martin, D. and Donaldson, S.I., 2024. Lessons from debates about foundational positive psychology theories & frameworks: Positivity Ratio, Broaden & Build, Happiness Pie, PERMA to PERMA+ 4. *The Journal of Positive Psychology*, pp.1-15. <https://doi.org/10.1080/17439760.2024.2325452>
- [25]Ali, M.M., West, K., Teich, J.L., Lynch, S., Mutter, R. and Dubenitz, J., 2019. Utilization of mental health services in an educational setting by adolescents in the United States. *Journal of School Health*, 89(5), pp.393-401. <https://doi.org/10.1111/josh.12753>
- [26]Khalid, N.M., Senom, F., Muhamad, A.S., Mansor, N.M.F. and Saleh, N.H., 2023. The Implementation of PERMA Model into Teaching and Learning of Generation Z. *International Journal of Learning, Teaching and Educational Research*, 22(9), pp.423-441. <https://doi.org/10.26803/ijlter.22.9.23>
- [27]Mutalib, S., 2021. Mental health prediction models using machine learning in higher education institution. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(5), pp.1782-1792. <https://doi.org/10.17762/turcomat.v12i5.2181>
- [28]Ding, Y., Chen, X., Fu, Q. and Zhong, S., 2020. A depression recognition method for college students using deep integrated support vector algorithm. *IEEE access*, 8, pp.75616-75629. <https://doi.org/10.1109/access.2020.2987523>
- [29]Shi, Q., Cai, N. and Jiao, W., 2022. Monitoring and Evaluating College Students' Mental Health Based on Big Data Analysis. *American Journal of Health Behavior*, 46(2), pp.164-176. <https://doi.org/10.5993/ajhb.46.2.6>
- [30]Rois, R., Ray, M., Rahman, A. and Roy, S.K., 2021. Prevalence and predicting factors of perceived stress among Bangladeshi university students using machine learning algorithms. *Journal of Health, Population and Nutrition*, 40, pp.1-12. <https://doi.org/10.1186/s41043-021-00276-5>
- [31]Sun, X., 2022. Application of data mining technology in college mental health education. *Frontiers in Psychology*, 13, p.974576. <https://doi.org/10.3389/fpsyg.2022.974576>
- [32]Wang, C., Sun, P., Li, M. and Li, Z., 2023. The application of PREMA model in college mental health education. *Applied Mathematics and Nonlinear Sciences*, 8(2), pp.1903-1912. <https://doi.org/10.2478/amns.2023.1.00294>
- [33]Kern, M.L., Waters, L.E., Adler, A. and White, M.A., 2015. A multidimensional approach to measuring well-being in students: Application of the PERMA framework. *The journal of positive psychology*, 10(3), pp.262-271. <https://doi.org/10.1080/17439760.2014.936962>