

Research Article

Application of Computer Digital Technology and Group Psychological Counseling in Higher Vocational Education Mental Health Education Curriculum under Complex Network Environment

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Today's civilization is a network, with networks covering and organizing it. The important physical carrier of modern human social activities and interactions is a hybrid network formed by the interaction and integration of multiple networks, which is a dynamic and complex network. In the network environment, the mode and efficiency of information dissemination have changed qualitatively, which in turn profoundly affects the evolution of higher vocational education students' attitudes toward things and their psychological states. At present, there are many problems and difficulties in mental health education in higher vocational education institutions: there are misunderstandings in setting curriculum teaching objectives, teaching methods are not flexible enough, the professionalism and stability of teachers need to be improved, and the follow-up of mental health education for students in schools is insufficient. For this reason, we should take active measures to improve the effectiveness of mental health education in higher vocational education institutions according to the characteristics of the times, establish reasonable mental health education curriculum objectives and evaluation methods, establish diversified teaching methods to adapt to the complex network environment, build a professional mental health education teacher team, actively improve the teaching concept of mental health education, and focus on strengthening mental health education counseling in the process of entrance education and career guidance. This paper proposes a method based on computer digital technology and group counseling in a complex network environment, which can be applied to higher vocational education mental health education courses, and the experimental results show that the designed method has a high accuracy rate and provides support for higher vocational education students' psychological education and counseling.

1. Introduction

In today's complex online environment, social media plays an important role. Social media technology, mainly represented by the Internet and cell phones, is indispensable in people's life, study, and work nowadays, and it gradually affects the changes in people's way of thinking and study habits. For students in higher vocational education, they are facing the increasingly cruel social competition environment, plus their own self-control and study habits are not very good; they will easily rely on cell phones and the

Internet, which will have a great impact on student's mental health in the long run [1–3]. At the same time, the development of social media technology has to a certain extent impacted the mental health education curriculum of higher vocational education. To help students' overall development and to bring into play the value of the mental health education curriculum, it is necessary to reform it in light of the current actual situation. The impact of social media technology on students' mental health in higher vocational education social media, as a new type of media, is mainly based on digital technology, which can make the speed of

communication accelerate, the information spread expand, and the way of communication enrich, which has a big difference compared with traditional media, and this is mainly based on the technology platform such as network and cell phone [4–8].

With the rapid development of Internet technology and the expansion of cell phone popularity, social media has gained the love of higher vocational education students with its flexible communication methods, advanced communication technology, and personalized communication content, which has changed their lives, studies, and other aspects. Incorrect use of social media technology can affect the formation of students' values. Social media technology emphasizes the personal experience of users, which is consistent with the psychology of higher vocational education students' media use. It helps them to play different roles on the corresponding technology platform, which makes them use social media very frequently and to a high degree promotes their personality development and self-identity, provides them with a space to ventilate and confide, and largely satisfies their needs, which also has some effects on the psychological health of higher vocational education students, who, due to their self-control and due to their poor self-control and cognitive ability, may become dependent on them and even be influenced by the bad information disseminated in them, which eventually leads to the formation of incorrect values and outlook on life. At the same time, the cognitive psychology of higher vocational education students has also changed due to the unique communication method of social media technology.

In the past classroom teaching, knowledge information was basically disseminated to students in a one-to-many way by teachers, and there was no more appropriate channel for students' feedback, which made the effectiveness of teaching affected to some extent. Social media technology has changed students' traditional thinking habits. Social media technology has also changed students' way of thinking, mainly because of the hypertext reading mode of social media technology, which breaks the original thinking logically and can make reading more colorful compared with the traditional fixed reading mode. This will not only affect students' learning and education habits but also change their thinking habits [5]. This course is based on the ultimate goal of promoting the mental development and psychological health of higher vocational education students, cultivating positive psychological qualities in education, making them fully understand the meaning, content, characteristics, and methods of mental health, guiding them to self-regulation, learning to improve and resolve bad psychological emotions through the power of external psychological counseling, and promoting their healthy physical and mental development. The personalized function of social media technology has made it possible for them to improve their mental health. The personalized function of social media technology makes mental health teaching more relevant. Compared with undergraduate students, students in higher vocational education have similar

characteristics, such as implicit situation, emotional variability, and psychological closure, and they also have strong independent thinking ability [6]. However, there are some differences between higher vocational education students and undergraduate students in terms of their mental health, mainly due to their limited personality development and their cognitive ability, and the difference between higher vocational education and undergraduate education, which can lead to low self-esteem and negative emotions in learning. Social media technology, with its powerful personalization function, has significantly altered people's lives and learning styles, particularly mobile Internet technology, which is not limited by environment or location and can obtain information quickly and is particularly popular among students in higher vocational education. This has had a significant impact on higher vocational education's mental health curriculum.

Because of its effectiveness and wide audience, group counseling has gradually been implemented and developed in universities since its introduction to China for study and application as a scientific as well as professional assisting task. The timeliness of group counseling has also been confirmed by numerous studies as a practical method of counseling and therapy, as well as a practical approach to mental health education and helping spiritual growth. Group counseling is a type of counseling activity that takes place in a group setting that is like a real social setting, with people in a group setting as the main intervention group, and is carried out through rational and scientific counseling activities and educational strategies [9–11]. Group counseling is very similar to people's real study and work environments, like a performance theater of living and learning environment, so it is easier for group members to influence and learn from each other in common activities, establish new concepts and behavior patterns, improve social networks through social skills training, and transfer them to real life, thus improving social skills, promoting self-personality, and enhancing mental toughness. The value of group counseling is shown in Figure 1 with one-on-one counseling services; the results of group counseling are more significant. In fact, people live, learn, and grow up in a group environment since childhood, and using a group format helps people to be closer to the social environment, more realistic, and easier to transfer. The impact and effect of group counseling not only enhances the psychological quality of people, but also contributes to the development of our society and country, and to the progress of our organizations and families. In recent years, it has been seen that the mental health education of college students has not yet obtained better results, which means that it only stays in the traditional lecture-based classroom and remains theoretical, and still does not have an accurate grasp of the current state of mental health of college students and does not understand their real development trend at that stage as well as their psychological needs. Nowadays, the mental health education course still focuses on teaching knowledge, while the experience and practice are too lightly regarded, resulting in the mental health education course being still similar to the traditional course and too classroom-oriented, which cannot

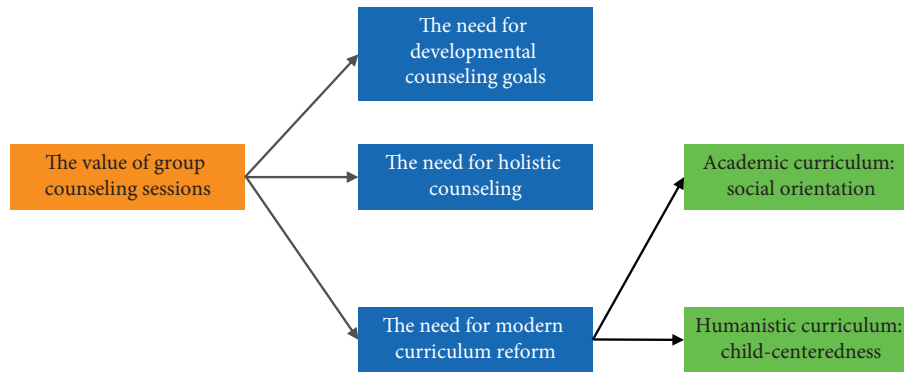


FIGURE 1: The value of group counseling sessions.

solve the problem at the root and makes the mental health education course not play its real role. The proper integration of group counseling and college mental health education courses will help improve the influence of college mental health education [12]. Group counseling emphasizes social context, interpersonal interaction, and activity experience, which can precisely make up for the shortcomings of traditional mental health education for college students. Through professional psychology teachers leading students to complete group counseling activities, some knowledge of mental health can be further transmitted to college students. Through group counseling activities, it can not only improve the activity of college students in mental health education courses but also allow them to improve their psychological capital level through experiential activities. To further improve the level of higher vocational education mental health education courses in the current complex network environment, this paper designs a method based on the application of computer digital technology and group counseling in higher vocational education mental health education courses. The experimental results show that the designed method has good application performance and effectiveness.

The following is a description of the study: the second section delves into the background and work that has led up to this point. The suggested work's techniques are discussed in Section 3, and the experimental analysis is discussed in Section 4. Finally, in Section 5, the conclusion puts the paper to a close.

2. Related Work

In this section, we discuss the mental health education courses in a complex network environment, group counseling, and computer digital technology.

2.1. Mental Health Education Courses in a Complex Network Environment. Today, social media-based networks have a significant impact on the behavior of micro-individuals in real life, and the structure and nature of communication media have fundamentally changed, leading to changes in the formation mechanisms of many macro-social phenomena as well. The current understanding of the laws of dynamic behavior in the complex network environment is

still very lacking, and decision-makers often fail to detect and resolve the vulnerability of the system in advance, or even in time, and how to cope with this trend is a common challenge for all countries in the network society. Especially in higher vocational education, an in-depth study of individual behaviors on complex networks and their interactions and exploration of their intrinsic laws and dynamics mechanisms can better utilize the network platform to help and assist the development of mental health of higher vocational education students [13].

Although the entire curriculum is relatively complete, it not only meets the actual psychological development needs of higher vocational education students but also has certain theoretical knowledge of psychology, which effectively integrates the application and discipline of the mental health curriculum and has the characteristics of distinctiveness and universality in the content, which meets the psychological development needs of higher vocational education students. The content of the course is unique and universal, and it meets the needs of psychological health growth of students in higher vocational education. However, in the actual teaching process, teachers still mainly adopt the indoctrination teaching mode without considering the students' subjectivity, and the focus of teaching is still limited to the cultivation of talents in higher vocational education. The reform of mental health curriculum in higher vocational education is based on the technology of complex network environment. Based on students' mental health problems and learning needs, the curriculum should be designed based on students' needs, and students should be guided to participate in the process of selecting, determining, and applying the curriculum content, especially under the constant influence of the technology of complex network environment, students' learning is more emphasized on autonomy and individualization, and only in this way can the effectiveness of teaching mental health courses be improved [14]. Therefore, the design of mental health courses in higher vocational education should be based on a full understanding of students' actual situation and according to their actual needs. The division of mental health problems and needs into modules should be carried out, firstly, by combining the physical and mental characteristics as well as the psychological needs of the whole higher vocational education students; secondly, according to the different industries

that students will engage in in the future; and thirdly, in the face of some special groups of students with psychological needs. This will ensure the integrity and relevance of the whole system and promote students' psychological health development. Organize course contents around students' career development and needs in organizing course contents: we should reorganize course contents based on the objectives of mental health education in higher vocational education after fully understanding students' mental health situation and needs. In the context of rapid development of complex network environment technology, the mental health curriculum of higher vocational education needs to serve the development of student's personal life, needs to organize the curriculum content according to the student's stage of psychological development needs, and also needs to arrange the curriculum content with a focus on different psychological problems. In the arrangement of mental health course content, the main aspects of life, learning, and personal career development should be included, and the content of the course should be targeted to these arrangements. Reform teaching methods according to students' media usage and habits nowadays: if the traditional teaching methods are still adopted, the teaching effect will still be relatively poor, and students will have negative emotions in learning [15]. Therefore, the teaching methods of mental health courses in higher vocational education must be changed to try to integrate with the types of media and habits used by students, to improve the effectiveness of education. First, mental health websites can be built to provide students with a variety of online courses so that they can choose according to their needs. Second, teachers can also use microblogs and Weibo to promote the educational content of mental health courses and communicate with students in a way that facilitates student acceptance and thus realizes the value of mental health education.

2.2. Group Counseling. Kurt Lewin, the founder of Group Dynamics, emphasized that, as a dynamic whole, groups have the cohesive power to attract participants. This power comes from adherence to the values and norms established within the group, which strongly promotes the organic integration of individual motivational needs and group goals, making individual behavior deeply influenced. Group counseling is based on group dynamics and uses empathy, acceptance, clarification, feedback, emotional reflection, and other counseling techniques to promote participants' self-awareness and reconstruction through a series of psychological interactions in a democratic, relaxed, and trusting environment, with the aim of modifying behavior, improving interpersonal relationships, enhancing work and learning efficiency, and improving quality of life. The feasibility of using group counseling in higher vocational education classes and the inherent characteristics of higher vocational education classes provide favorable conditions for group counseling. This feature can not only meet the requirements of group counseling in terms of the number of participants but also ensure that the problems faced by students in different learning and growth stages can be

solved in a targeted manner. Second, the class is better. The group counseling system is shown in Figure 2. During the formation and development of the class collective, all students face a common task, work toward a common development goal, and interact with each other through long-term interaction, a feature that provides the possibility of group dynamics. Third, the homogeneity of the students in the class is high. They are of similar age, have roughly the same social experience, have comparable levels of cognitive development, and have certain similarities in psychological needs and developmental confusion, a feature that facilitates the goal setting, content selection, and effect evaluation of group counseling [16–19]. The advantages of group counseling provide a strong guarantee for strengthening class construction in higher vocational education. First, group counseling advocates democratic, cooperative, and sharing relationships and atmosphere, which can effectively motivate students to actively participate in multiple interpersonal interactions and promote self-awareness and cognition, which is a more efficient way of learning. Secondly, under group conditions, trust, acceptance, encouragement, and help flow in both directions among all participants, the interaction mode of “I help others, and everyone helps me” can effectively promote the closeness among participants and enhance the cohesion of the group. Thirdly, besides the significant educational development function, group counseling also has the functions of preventing psychological problems, reducing or solving bad emotions, improving adaptability and interpersonal relationships, and achieving multiple help in the same situation with high efficiency. At present, the problems in higher vocational education classes are mainly due to authoritative or permissive education and management methods. Group counseling, which emphasizes democratic and mutual support and experience sharing, can effectively improve this situation.

From enrollment to graduation, individuals experience rich and profound psychological changes, and these changes are the main factors affecting the development of classroom groups. After entering the campus, freshmen are unfamiliar with the world; how to smoothly pass the adjustment period and prepare for the three-year life and study is a common problem that needs to be solved. In this context, group psychological counseling programs such as “Survival of the Fittest-New Students' Adaptation,” “Knowing Oneself-Accepting Oneself,” and “The structure of a Human Is Mutual Support-Interpersonal Relationship” can effectively help new students to build up their own psychological skills. Counseling can effectively help new students build a clear perception of the environment, enhance self-confidence, and improve interpersonal skills. Most of the students start to prepare for various vocational exams, and some of them become confused because their majors are far from their career aspirations, and various interpersonal relationships become deep and complicated. How to improve study efficiency, study and emotion, etc. has become an urgent problem to be solved. Group counseling on topics such as “Learn More-Learning Ability,” “Draw a Blueprint for Life-Career

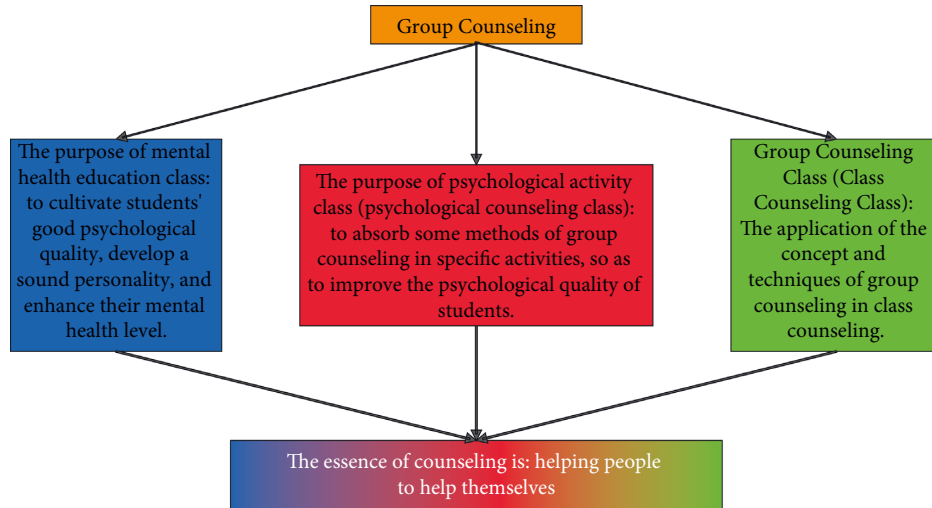


FIGURE 2: Group counseling system.

Planning,” and “Grow in Love-Love Relationship” can help students master efficient the group counseling helps students to master efficient learning strategies, understand their majors and their future development prospects objectively, clarify the direction of their efforts, and gain knowledge and experience in dealing with interpersonal and emotional problems. The main problems faced by college juniors are difficulties in choosing employment or further education and the emotional experiences caused by anxiety, frustration, and depression. In this important decision period of life, it is especially important to make a rational and most suitable choice without being swayed by negative emotions. Group counseling on topics such as “Dancing with Stress-Stress Coping,” “Enjoying Emotions-Emotion Management,” and “Enhancing Employability” can help students effectively manage their emotions and improve the group counseling helps students manage their emotions effectively and improve their competitiveness in job hunting. Respecting students’ individual differences and autonomy, group counseling with different themes can be implemented in different categories. While meeting the common psychological needs of students in the class, it is necessary to consider the potential needs of specific student groups, set up group counseling with different themes, and guide students with corresponding psychological problems to participate in their own choice. The optimal size of group counseling for college students is 8 to 15 students. In a class of about 50 students, it is feasible to implement group counseling with different themes, and the stability of the class is conducive to continuous follow-up counseling and consolidation of results. Group counseling is a form of mental health education based on group dynamics, social learning, interpersonal communication theory, and related counseling theories. It is essential for group leaders to have the appropriate theoretical knowledge and professional skills to ensure the effective completion of counseling activities. The counselor is the best person to be the group leader because he or she knows the overall situation of the students in the class and the students are more familiar with and trust

the counselor. There are two ways for counselors to learn the theoretical knowledge and professional skills of group counseling before the counseling activities are carried out [20]. One is to attend in-service training to receive systematic practical training and supervision. The second is to learn the theory and techniques through observation and practice with the professional power of the school’s mental health education center. During the initial practical operation, they gain a comprehensive and in-depth understanding of the outstanding problems in class construction and the main contradictions faced by students’ development, design group counseling programs with the guidance and help of professional teachers, and communicate the implementation status in a timely manner, so as to gradually construct and improve the theoretical knowledge and professional skills of group counseling.

2.3. *Computer Digital Technology.* The rise of new media technology and its widespread use have had a profound impact on the reform of the teaching of mental health education in higher vocational education. As early as 1984, researchers began to pay attention to the issue of “mental health status,” and many outstanding scholars have led the development and progress of mental health. The uses of neural networks to build mathematical models to solve real-world problems, to solve nonlinear problems, to predict time series based on neural networks, and to improve the stability, convergence, and speed of convergence of networks are also topics of research in mathematics. The intelligent mental health assessment architecture is shown in Figure 3. Currently, neural network methods are commonly chosen for research on mental health condition prediction. The established prediction system of college student’s mental health condition, through the establishment of the neural network model and network learning, provides a basis for the prediction of college students’ mental health to a certain extent; the established mental health condition judgment model can judge the mental health condition well, based on

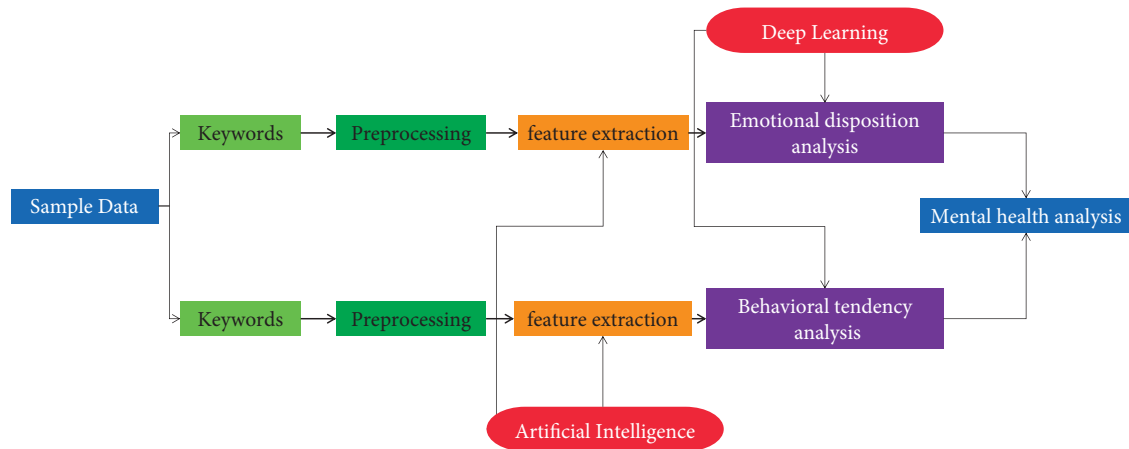


FIGURE 3: Intelligent mental health assessment framework.

the fuzzy nature of mental health condition and the highly nonlinear characteristics of mental condition judgment, and effectively combines neural network and fuzzy mathematics. The research on face information recognition based on computer vision has attracted the attention of many researchers [17–21]. The Natural Science Foundation of China has planned the field of computer vision-based facial information recognition as an important research direction. Many research institutions are also actively conducting research in this field. FACS, a hybrid analysis system for human facial expressions, encodes eyes and mouth and reduces the error rate of facial detection. While traditional facial recognition targets are mostly in two-dimensional images, researchers at the University of Science and Technology of China have conducted research on facial expressions of human faces in three-dimensional space and have concluded a three-dimensional space-based facial feature extraction and analysis method.

The theory of artificial psychology is concerned with the research of face-based psychological recognition algorithms. A set of facial expression detection and recognition software uses multiple cameras to capture face images and processes and analyzes the face images for calculation, followed by a comparison with six typical basic expression data stored in the database to finally obtain the results of expression recognition. A weak classifier based on Boosting-Haar features is used to extract face information, and this classifier can detect seven typical facial emotions of faces. The active appearance model algorithm extracts facial expression features of faces and builds facial models and finally uses neural networks to classify expressions. The current status of domestic and international research on psychological recognition methods is based on speech information. The height, speed, and strength of speech can express different psychological activities. Humans can judge each other's emotions from similar words, and if features related to emotions can be extracted from audio signals, the psychological information in speech can be recognized [21]. Many researchers have used decision tree methods for psychological recognition of speech, along with a combination of acoustics, vocabulary, and discourse for mental state recognition. The spectral and rhythmic

parameters in audio were extracted and both types of parameters were processed using probabilistic neural networks and Hidden Markov Models to achieve better speech recognition results. In addition, methods that use deep neural networks to extract high-level features from video frames and use an extreme learner for mental classification are widely used, and the features extracted from speech signals in this class include MFCC and pitch. In addition, many researchers have used raw audio waveforms as input and used deep convolutional recurrent network models for audio signal recognition. With the increasing research on speech psychological recognition tasks, several open-source tools have emerged to provide researchers with great convenience in extracting speech features, enabling the extraction of traditional acoustic features. Depression and sadness have been found to share the same gait characteristics, and both psychological states lead to slower gait speed, reduced arm swing and vertical head movement, and greater lateral body sway and a paralyzed posture. Gait is an indispensable way for people to show their feelings, and it is no less important than facial and voice messages in the process of emotional communication. We often see people with unusually rich body movements, who externalize their mental emotions more frequently. In order to investigate the correlation between changes in body posture and psychoemotional factors, researchers conducted experiments on the discrimination of emotional outcomes based on gait behavior, and the final experimental results proved that gait and voice information play a similar role in the expression of people's psychoemotions and that the emotional judgments derived from gait behavior do not differ significantly from those of voice emotions. In addition, the experiments also proved that some gait actions play a similar effect as facial information in the process of mental emotion judgment. One obtains information such as gesture features, behavior features, and coordinate features from the 3D space, and then the classifier trains the model, and the model obtained after training can accurately identify the current psychoemotional state based on gait actions. Finally, the current status of domestic and international research on multimodal fusion-based psychological recognition methods is introduced. Speech and video

information are fused, and the fused features are used to recognize people's psychological conditions. They extract the speech and video features separately and fuse them, followed by sending the integrated features fusing the two kinds of information to the classifier for model training, and finally obtaining a bimodal psychological recognition model fusing the two kinds of modal information of speech and video. The experimental results demonstrate that multimodal mental recognition outperforms the individual unimodal mental recognition results. The researchers fused speech and telepathy features and used them to identify emotional information. They used a feature-level fusion approach to fuse acoustic and ECG features, and the final recognition rate was substantially improved compared to the unimodal emotion analysis methods for speech or ECG information.

3. Method

In the method section, we defined the model architecture, data cleaning and preprocessing, text-based sentiment computer, image-based emotion computer, group counseling, and mental health assessment model generation.

3.1. Model Architecture. The model design is based on the concept of a systematic approach, analyzing to determine the assessment level, designing the automatic assessment framework, selecting the assessment strategy, implementing the model assessment, evaluating the model assessment effect, correcting the model parameters, and applying them. To achieve the fusion of multimodal data information, the model is designed from the following five parts: data cleaning and preprocessing text-based affective computing, image-based affective computing, group psychological counseling, and mental health assessment model generation. The mental health assessment model with multimodal fusion computation is a process of quickly and accurately identifying students' mental health levels by mining the real emotions implied behind their modal data such as text, images, and expressions, and comprehensively considering their psychological changes over a period. Based on this, an automatic assessment model of college students' mental health based on multimodal data fusion is constructed, and the model framework is shown in Figure 4.

3.2. Data Cleaning and Preprocessing. The collected students' web content data cannot be directly used for the processing and analysis of psychological characteristics, and these raw data need to be cleaned as well as preprocessed. Firstly, the data obtained from the depression self-assessment questionnaire are cleaned; i.e., subjects with zero or full scores and less than 3 minutes to fill in the questionnaire are removed; secondly, the data obtained by means of web crawlers are cleaned; i.e., subjects with the amount of web content data below a threshold are removed; finally, the multimodal data are preprocessed and converted into model-recognizable symbols before computer processing. For example, we remove irrelevant symbols in text data and convert fonts and other operations; we convert, resize, and normalize image data.

3.3. Text-Based Sentiment Computing. Textual information is the basic information for humans to convey emotions and express thoughts and is an important external expression of individuals' psychological states. Therefore, mining the psychological state and emotional attitude of individuals when they post content plays an important role in accurately identifying mental health conditions. Text is typical sequential data, and if the sentence contextual information can be captured, the sentiment tendency of the text can be well-mined based on semantic understanding; therefore, this study establishes a three-layer neural network framework of word embedding layer-bidirectional long and short-term memory (Bi-LSTM) layer-dense connectivity layer, as shown in Figure 5. The distributed representation of "word embedding" maps words into dense low-dimensional vectors and ensures that semantically similar words are closer together in vector space, which is more suitable for sentiment analysis tasks than the one-hot encoding representation. The long- and short-term memory (LSTM) is known for its unique gating structure and memory units that avoid long-term dependency and gradient disappearance problems, but information can only be propagated in one direction when learning text sequence features. In order to deeply understand the semantics of sayings and acquire effective sentiment feature representations, the thesis designs a bidirectional long- and short-term memory network layer to fully grasp the contextual information of sayings text. The sayings feature representation o_t moment t requires acquiring the forward hidden state h_t and the backward hidden state h'_t at moment t , where \oplus represents the integration of the two in a spliced manner; the forward hidden state h_t at moment t is obtained from the input x_t at moment t , $t-1$ moment; the backward hidden state h'_t at moment t is calculated from the input x_t at moment t , the hidden state information at moment $t+1$, where the f function is an LSTM nonlinear function, W , U , W' , U' denote the weights of the function, and b , b' denote the bias of the function.

$$\begin{aligned} o_t &= h_t \oplus h'_t, \\ h_t &= f(W \times X_t + U \times h_{t-1} + b), \\ h'_t &= f(W' \times X_t + U \times h_{t+1} + b'). \end{aligned} \quad (1)$$

3.4. Image-Based Emotion Computing. The VGG16 network is a convolutional neural network with a 16-layer structure proposed by the Vision Group of Oxford University. This study uses Visual Geometry Group (VGG16) as the baseline model and constructs a Cable News Network (CNN) model by fine-tuning the strategy to capture the hidden emotional tendencies behind the images. Image-based emotion computation is a complex visual problem, and the only way for CNN to accurately compute students' mental emotions when posting images is to learn many parameters and effective features. To solve the scale dilemma of labeled data using transfer learning techniques, the VGG16 convolutional basis trained on large Image Net datasets is used as a pretraining model for image sentiment computation to learn

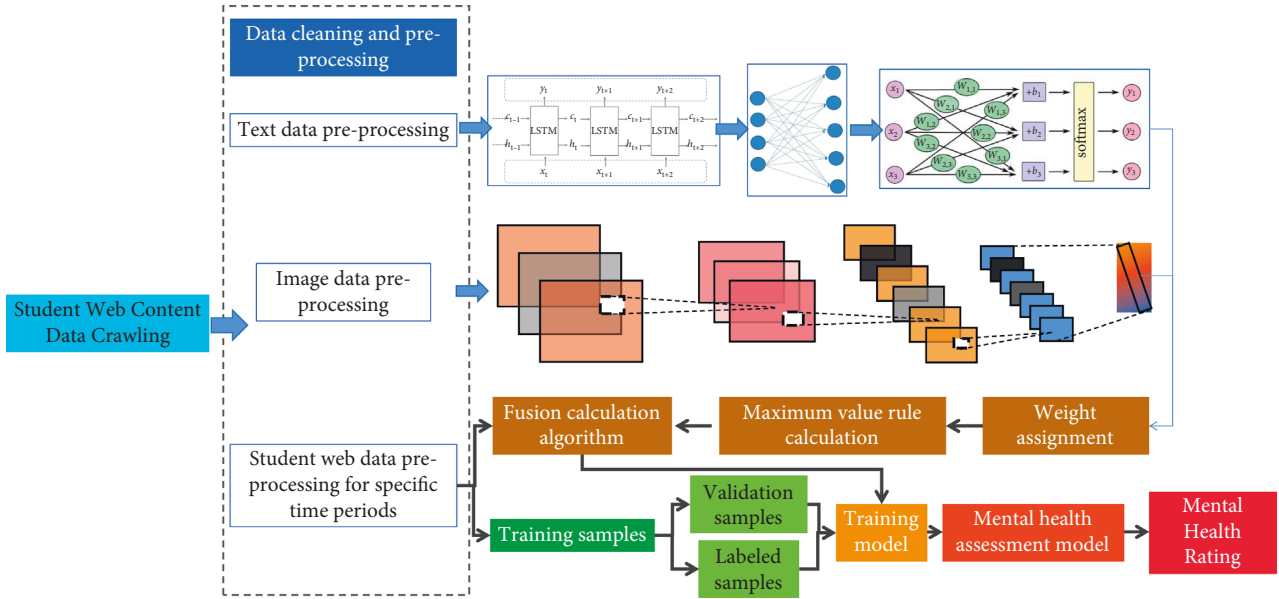


FIGURE 4: Model structure.

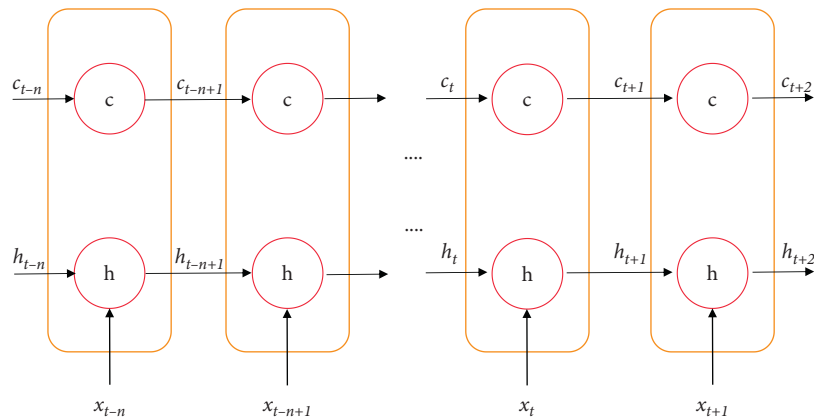


FIGURE 5: Text processing model.

the generic feature representation of images. The bottom convolutional layer in the convolutional base learns local generic features of the image, while the top layer learns more abstract and specialized feature representations. In this study, the CNN is trained by releasing the weights of the fifth convolutional block of VGG to learn the image sentiment representation, which can make the network structure more suitable for computing image sentiment and avoid the risk of overfitting. After the convolutional basis learns the sentiment representation of the said image, the sentiment tendency of the image is obtained by integrating the densely connected layers and Softmax classification.

$$S(V_i) = \frac{\exp(V_i)}{\sum_{j=1}^n \exp(V_j)}, \quad (2)$$

where V_i refers to the i^{th} category element of the output vector of the dense connectivity layer, $S(V_i)$ is the i^{th} category sentiment probability value of the image, and n represents the positive and negative sentiment categories.

3.5. Group Counseling. The five-year training model of higher vocational education is “4 + 1,” in which the first four years are spent on theoretical professional courses in school and the fifth year is spent on professional practice in various internship units. In classroom management, group counseling is used, in which the counselor considers the psychological characteristics of students and the objectives of classroom construction and carries out classroom group counseling in a targeted and hierarchical manner to address the problems in student management.

3.6. Mental Health Assessment Model Generation. Based on the ecological principle of ecological transient assessment, we obtained students’ online content data in their natural state and attempted to process and analyze these data to extract psychological characteristics in order to assess their mental health status. To achieve this goal, two tasks need to be accomplished: first, to fuse the complementary information of multimodal data in terms of emotional expression;

and second, to consider the changes in students' mood and emotion over time. The maximum rule fusion is used to calculate multimodal data, and the implicit conditional random field algorithm (HCRF) is used to consider the psychological changes of students over a specific period in order to accurately assess the mental health level of individuals. The effective integration of multimodal information is a core issue in multimodal emotion calculation, and the maximum value rule is used to calculate the text and image emotional tendency values, and the emotional components of both modalities are fully considered to accurately decide the psychological state of students when they publish their sayings.

$$P'_j = \max_i (P_{ij}(n)), \quad i = 1, 2, j = 1, 2, \quad (3)$$

$$P_j(n) = \frac{P'_j j(n)}{\sum_j P'_j j(n)},$$

where i and j are the numbers of classifiers and categories and $P_j(n)$ is the probability value of the j^{th} effective category of the said statement. Mental health is a state-based psychological trait that changes to a large extent over time and achieving an accurate assessment requires consideration of the student's web content data for a period prior to the current point in time. The paper proposes a time-series analysis model based on the HCRF algorithm with the intention of uncovering the inherent developmental patterns of different mental health levels over time and discovering the relationship between affective changes and mental health. $x = \{x_1, x_2, \dots, x_n\}$ corresponds to the affective scores of each sayings data of the student during the time period and is a set of observations of the time-series model; $h = \{h_1, h_2, \dots, h_n\}$ corresponds to the learned regular features in the observation sequence, which is a set of hidden random variables of the time-series model; y denotes the random variable of mental health level corresponding to a set of observation sequences of students. When given a set of web content data observation sequences x for a student's time period, the conditional probability of the mental health rating variable y is calculated.

$$P(y | x, \theta) = \sum_h P(y, h | x, \theta) \frac{\sum_h e^{\psi(y, h, x; \theta)}}{\sum_{y \in H} e^{\psi(y, h, x; \theta)}}, \quad (4)$$

where the potential function $\psi(y, h, x; \theta)$ parameterized by θ is used to measure the compatibility between a rank category, a set of hidden state sequences, and a set of observation sequences.

4. Experimentation and Evaluation

In the experimentation and evaluation section, we describe the dataset, evaluation metrics, and experimental results.

4.1. Dataset. In this study, a depression self-assessment questionnaire designed according to the CES-D scale was distributed to a higher vocational education student as

the experimental subject, and a data confidentiality agreement was signed with him to collect the subject's online content data. Based on the data cleaning, we labeled the depression level categories of the subjects based on the score levels of the depression self-assessment questionnaire and invited domain experts to label the positive and negative emotion categories of the multimodal data based on affective tendencies, thus constituting a Joint Annotation Dataset for Implicit Psychological Assessment (JA-IPAD). After cross-checking by several experts in the field, the mental health level of the evaluation model included healthy, possibly depressed, and depressed, and the distribution of the three categories was 128 people (61.0%), 57 people (27.1%), and 25 people (11.9%), respectively, from which multimodal data published by 180 people were randomly selected as the training set and the multimodal data published by 30 people as the test set.

4.2. Evaluation Metrics. The data of the text sentiment calculation model and image sentiment calculation model were distributed more evenly, and generic evaluation metrics were selected to evaluate the model effects to analyze the precision rate P , recall rate R , and F -value. The number of students in the mental health assessment model is small and the data of different psychological levels are unevenly distributed. To ensure the credibility of the results, a stratified cross-validation strategy is used to maintain the original proportion of each level category for 5-fold stratified cross-validation, and an accuracy index is selected to evaluate the model effect. The teaching objectives of the higher vocational education mental health education course under the integration of computer digital technology and group counseling techniques in a complex network environment can be expressed as follows (see Table 1).

4.3. Experimental Results. The data of the text sentiment calculation model and image sentiment calculation model were distributed more evenly, and generic evaluation metrics were selected to evaluate the model effects to analyze the precision rate P , recall rate R , and F -value. The number of students in the mental health assessment model is small and the data of different psychological levels are unevenly distributed. To ensure the credibility of the results, a stratified cross-validation strategy is used to maintain the original proportion of each level category for 5-fold stratified cross-validation, and the accuracy index is selected to evaluate the model effect.

As can be seen from Table 2, the sentiment calculation results of the fusion of graphical and textual multimodality are all better than those of single modality, and the fusion calculation method of the mean value rule and the maximum value rule exceeds the single text modality in terms of accuracy rate by about 2.2%. The results show that the introduction of image modality on top of text modality can effectively supplement the problem of insufficient sentiment information of single modality, and the multimodal data can

TABLE 1: Teaching objectives of mental health education courses in higher vocational education.

Knowledge objectives	To understand the basic knowledge of mental health and the characteristics of self-psychological development
	To understand the causes of the formation of psychological problems and confusion
Skill objectives	To master the skills of self-exploration and be able to understand oneself in depth
	To master psychological adjustment skills and be able to take the initiative to solve their own psychological confusion
	To master the methods of optimizing psychological quality, and be able to actively improve psychological health
Quality objectives	To have a correct view of righteousness and profit, success and failure, and gain and loss
	To have firm ideals and beliefs and be willing to strive for them
	To have self-esteem and self-confidence, rational and calm, goodwill to others, and cherish life the mental qualities of self-respect, self-confidence, rationality and calmness, kindness to others, and love for life
	To have the spirit of perseverance and having a positive, optimistic, and healthy attitude towards life
	To have a strong sense of responsibility and teamwork, good professional psychological strong sense of responsibility and teamwork, good professional psychological qualities, love of work, and dedication

TABLE 2: Mental health status calculation results.

Model	Accuracy rate P (%)	Recall rate R (%)	F -value
Bi-LSTM (T)	88.4	88.1	88.2
Fine-tuned CNN (V)	71.9	71.7	71.8
Bi-LSTM + trimmed CNN + AVER (T + V)	89.0	87.1	88.0
Bi-LSTM + Trim CNN + MAX (T + V)	90.6	87.7	89.1

TABLE 3: Mental health assessment results.

Health (%)	Possible depression (%)	Presence of depression (%)	Average accuracy (%)
91.45	79.09	84.85	84.0

well solve the problem of expression polysemy and successfully capture the real sentiment tendency of students when they deliver these self-reported contents. Furthermore, in the fusion calculation, the maximum value rule is 1.6 percent more accurate than the mean value rule. When there is a disparity between the text and picture sentiment calculation findings, the maximum rule, which depends on the more accurate side of the sentiment calculation, is preferable to the mean rule, which treats both equally. In the fusion computational model based on the maximum value rule, the text modality holds more weight than the imaging modality due to the uncommon sentiment computation results, but the accompanying pictures of said posts are strong and direct in emotional expression, which helps to fuse the multimodal sentiment computational model to accurately identify students' emotions and sentiments. To verify the validity of the mental health assessment model, the scale scores were compared with the model assessment results to obtain accuracy, and the experimental results are shown in Table 3.

The accuracy of identification was high for the health category, fair for the depression category, and relatively low for the possible depression category. The health category and the depression category are two-way extremes; in terms of longitudinal time development, students in the health category are in a positive mood most of the time, while students in the category with depressive tendencies are in a constant low mood and have a negative attitude toward external stimuli; thus the model can better capture the psychological characteristics of both categories and effectively determine whether students have depressive tendencies.

5. Conclusion

This paper studies the application of computer digital technology and group counseling technology in the higher vocational education mental health education course under the complex network environment. The rapid development of the Internet has profoundly influenced and changed our lives. Online shopping, online socializing, online course selection, etc. permeate all aspects of students' lives in institutions and become an indispensable part. In this process, the psychology and behavior of students in institutions have also created some new characteristics. In this paper, we propose a method of computer digital technology and group counseling in a complex network environment. Through group counseling, students in the experimental group indicated that they effectively promoted self-understanding, learned effective learning methods and time management methods, understood the importance of learning goals, enhanced self-confidence in learning, and had a clearer understanding of their future career development through summaries and group member sharing in group activities. They also feel that they have learned to communicate and cooperate better with others, which effectively helps them to adjust their emotions and better devote themselves to their study. This study adopts a deep learning algorithm to process web content data, which can obtain deep semantic knowledge and real emotional polarity of text, image, and other modal data and has more advantages than traditional machine learning algorithms in terms of evaluation time consumption. It provides technical support for improving students' psychological profile, intervening in students' psychology accurately, and optimizing mental health

services in the era of smart education. Higher vocational education is a special stage, in which students in late adolescence have to learn how to face the learning and living environment, as well as to orient themselves, know themselves, and explore themselves, which is a stage prone to psychological problems. Therefore, the emergence of positive psychology provides a new vision for continuously reforming and innovating the problems that exist in the current practice of mental health education courses, so that these courses can truly become practical courses that assist college students in institutions in coping with confusion and improving their psychological quality.

Data Availability

The datasets used during the current study are available from the author on reasonable request.

Conflicts of Interest

The author declares that he has no conflicts of interest.

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