WILEY | Hindawi

*Retraction*

# Retracted: A Study on the Application of Music Education to Improve College Students' Mental Health in the Context of 5G

## Wireless Communications and Mobile Computing

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

## References

[1] J. Li, "A Study on the Application of Music Education to Improve College Students' Mental Health in the Context of 5G," *Wireless Communications and Mobile Computing*, vol. 2021, Article ID 5423459, 12 pages, 2021.

WILEY | Hindawi

*Research Article*

# A Study on the Application of Music Education to Improve College Students' Mental Health in the Context of 5G

**Jiawen Li** [iD]

*Lanzhou City University, Lanzhou Gansu 730070, China*

Correspondence should be addressed to Jiawen Li; lijiawen@lzcu.edu.cn

This paper provides an in-depth study and analysis of music education to improve the mental health of college students in the context of 5G and for practical application. How to explore the ideas and methods of using music education to channel and resolve the psychological problems of this student group and then help them shape a healthy and upward psychological state, based on field research on the psychological and emotional health of contemporary higher education students, becomes an important issue that needs to be solved in front of most music educators. Musical emotions are not only related to the acoustic properties of music but also closely related to the age, gender, musical background, and social cognition of individuals. To explore the neural mechanisms by which musical rhythm affects emotional processing, it is necessary not only to achieve reasonable manipulation of rhythmic variables but also to effectively control for relevant additional variables, to clarify the relationship between rhythm and musical emotion from a theoretical perspective, and to provide operational guidance significance for bringing into play the mental health value of musical emotion. Discuss the commonalities and mutual assistance between the interactional music classroom and humanistic and positive psychology in terms of ideological connotations. Discuss the practical implications of humanistic psychology and its derivation of positive psychology in terms of self-actualization, student-centered view of education, associated integration and developmental educational values, psychological fluency experience, positive emotions, positive self, and positive motivation, which have common ideas with the philosophical theory of interaction, for the interactive music classroom. The characteristics and role of the music teacher in the interacting music classroom from a psychological perspective are described in terms of both teacher psychological construction and teaching attitudes. The enrichment of the ideas, psychological laws, and experiences in humanistic and positive psychology on the model of the interacting music classroom guided by the philosophical theory of interaction is discussed, divided into four subsections: suggestions for classroom goal setting, suggestions for teaching methods, teacher-student evaluation, and teaching fragment design, aimed at making teachers and students interact easily and happily and live soberly and creatively.

## 1. Introduction

The mental health of college students is one of the focal issues of current social concern, and the use of music to regulate the psychological condition of college students is an avenue worth exploring. To give full play to the potential function of constructive intervention in college students' mental health by the music courses that colleges and universities themselves possess, the author reads a lot of literature and conducts fieldwork [1]. This study will start from the teaching reality and combine with the field teaching examinations to truly show the effect of music education in higher educa-

tion institutions on the psychological regulation function of nonmusic major college students, aiming to be able to have a more objective understanding of the current college students' psychological experience in music teaching activities, to be able to summarize the experience in future teaching practice, to seek appropriate teaching methods, and to lay the foundation for a good education in schools and families [2]. Changes in rhythm speed can awaken individual brain activity-related activations, which are manifested as a significant correlation with desynchronized EEG intensity associated with events in the left motor cortex channel. At the same time, enriching the theoretical research on the

psychological regulation function of music education for nonmusic major college students in higher education institutions can make the research limited to theoretical aspects get further practical exploration, verify the role of music education in the psychological regulation of nonmusic major college students, and further affirm the psychological construction of music education for nonmusic major college students through the investigation and empirical research of teaching contents and teaching forms [3] to provide some reference materials for the reform and development of music education in higher education institutions. According to the needs of this study, the author read a large amount of literature, and the design of the study was carried out one after another under the guidance and inspiration of these references. Since various mental health conditions are more prominent among students in China's general colleges and universities at present, therefore how to use the educational function of colleges and universities to adjust the emotions of college students and solve their mental health problems is an urgent issue to be solved [4]. As music is a kind of emotional art, it has a natural effect on people's emotions and psychology, so how to use music education in colleges and universities to adjust the psychological condition of college students becomes a direction worth exploring. This thesis writing intends to provide some theoretical and practical references for the reform and development of music teaching in colleges and universities through investigation and empirical research.

The interaction music classroom is a teaching model in which the concept of interaction music education is applied to the music classroom, also known as the dialogue music classroom, proposed by Zhu Yujiang. The concept of interaction music education is rooted in the Western philosophical theory of interaction, which clarifies the basis, ways, and background of music education as a form of interaction from three aspects: intersubjectivity, dialogical understanding, and the living world, in which the interaction music classroom is rooted and the basic conditions and strategies of the dialogue music classroom are constructed. Inclusive education believes that to cultivate a complete person, all aspects must be taken into consideration, and the way to promote personal growth is to enhance self-awareness. The author conducted a semester-long high school music appreciation class based on the dialogic music classroom model and felt that the students' originally closed and distant hearts were slowly opening to the author, the teacher-student relationship became a friend relationship, music appreciation became a meaningful music sharing, and a class made both the author and the students linger, which is the charm of the interactive music classroom [5]. However, in the teaching process, the author sometimes unconsciously falls into the mire of the traditional one-way teaching model, which is caused by the psychological inertia of teachers and students. The author believes that the interactive music classroom needs to be integrated with psychology with the same values to help teachers teach and listen in a more relaxed and freer way from the psychological level of teachers and students, and students learn and express themselves more easily and enthusiastically so that the classroom

atmosphere is more positive and harmonious, the psychological well-being of teachers and students is higher, and the road to self-actualization is smoother. In music education, through sincere, equal, and mutually understanding interactions between teachers and students, a loving teacher-student relationship and a lively teaching atmosphere are formed, and students' autonomy, creativity, and individuality are developed [6].

From the above, it can be found that both the application of humanistic and positive psychology in education and interaction music education share common goals: to establish an equal and harmonious teacher-student relationship, to break the traditional boundaries between upper- and lower-level teachers and students, to emphasize students' initiative, to develop students' creativity and personality, and to create a positive and relaxed classroom environment. Integrating the educational concepts of humanistic and positive psychology into the interaction music classroom can enrich the interaction music classroom and make it more attainable, thereby enabling teachers and students to have a better music classroom experience and changing their attitudes toward life and learning. By integrating the results of the above study, several ideas are proposed for the future reform and construction of the music education curriculum in higher education institutions. Through the investigation and analysis of the mental health of nonmusic college students in higher education institutions, this study summarizes a new way of music psychological education suitable for higher education institutions. It broadens the research field of music education on the psychological regulation function of nonmusic major college students in higher education institutions; expands the application field of music regulation while improving the theory, and provides a preliminary reference for the reform and development of music education in higher education institutions. The results of this study will enrich the theoretical system about the function of music education and students' psychological regulation in higher education institutions. The research results of this study will provide some references for the reform and development of music teaching in higher education institutions in the future.

## 2. Current Status of Research

This paper intends to closely link music education with the practice of carrying out quality education in universities. The fundamental task of quality education is to cultivate socialist builders with innovative thinking. Music education can develop students' interests, emotions, and other nonintellectual factors through inspiring students' imagination and association, thus achieving the purpose of cultivating students' innovative personalities. Therefore, music education in colleges and universities is a good remedy to correct the "dysfunctional" personality of contemporary college students [7]. With the help of music education, students can develop their creative personalities and experience a sense of self-worth and self-efficacy, so that they can overcome the various personality defects formed by many negative factors in the contemporary cultural environment. In terms of

measures to strengthen music education in colleges and universities, the study proposes to establish various music practice bases on and off campus, to promote the popularity of music education through strengthening extracurricular activities and the "second classroom," and to strengthen the nurturing effect of music education. From the actual development of music education in colleges and universities, the study gives full play to the multiple functions of music education in teaching practice and provides aesthetic and emotional guidance to the psychology of college students [8]. He thinks that the music teaching in colleges and universities should be carried out to play its role in guiding students' ideology, starting from the theory of the psychological regulation function of music education, combined with the actual teaching development, to explore and find a special road suitable for the music mental health education of college students in colleges and universities. With the help of appreciation courses and performance activities in music education, college students can be encouraged to participate actively, so that they can become masters of music teaching activities, help college students to be out of the closed mind, actively communicate with others, learn to accept others, learn to control their emotions in interaction, regulate their mind, relieve their pressure, and improve their physical and mental health [9].

It is believed that music education is not only a means of art teaching, but its role for psychological regulation and treatment is also very significant; thus, the role and value of music education disease treatment should be actively played in music education in colleges and universities [10], because the cultivation of students' independent personality is the most important. Other music teachers often use their majesty to deter students and overwhelm them with their knowledge. Currently, external motivations account for a large part of students' learning. Once external motivations are withdrawn, students will find it difficult to continue learning in this field. Colleges and universities should start from the actual psychological health of students and give the role of psychological regulation function to the colorful music teaching activities, which were widely applied to the practice of college students' mental health work [11]. Specifically, it can help students improve their psychological state by opening music therapy rooms with the help of school teaching resources and facilities, and it can also help students understand the importance of a good state of mind for learning and growth by opening relevant music psychology elective courses around contents closely related to students' learning and life, helping students establish good social circles, and enhancing emotional exchanges between each other [12]. The content is based on contents closely related to students' study and life [13]. In addition, we can also take advantage of Internet resources to conduct online psychological counseling activities through the Internet, help students recommend more beautiful and inspirational music works, and provide some general knowledge of music therapy, so that students like to get psychological pleasure through music [14]. At the same time, the school formed related psychological aspects of the club, using music as a carrier, through games, performances, and other ways to strengthen the communication between students, forming a good atmosphere of helping people, solidarity, and love, in a subtle way to regulate the students' nervous study pressure, help them to eliminate anxiety, and create a healthy psychological state [15].

The focus on research, philosophy, and exploration is one of the characteristics of the American music education curriculum. In addition, the teaching models that can present the philosophy of music education in American schools, such as the process model and the goal model followed, are also the theoretical development and the path of reaching the auxiliary function of music education. In the context of the educational phenomena that I found in high school music education teaching during my internship practice, we discuss the development and application of the auxiliary functions of music education in high school music teaching and refer to the functions of music education to work more comprehensively for students. At the same time, we analyze the connotation and composition of the auxiliary functions of music education, its attainment, and paths, to provide theoretical support for the teaching of music education in general high schools; based on the research results, we explore how to conduct music education and teaching at the general high school level, such as providing practical references for teachers' teaching in terms of material analysis, teaching design, teaching implementation, and educational assessment.

## 3. Analysis of Music Education in the Context of 5G to Improve College Students' Mental Health Applications

*3.1. 5G Background Music Education Design.* The increasing maturity of 5G technology has driven the development of many industries, and most high-tech companies have become important players in this change, starting to use 5G technology to promote autonomous driving, medical big data, assembly manufacturing, online education, smart cities, and other industries to move towards intelligence. According to professional research conducted by bimedia consulting, 73.0% of Chinese Internet users surveyed are optimistic about the future development of 5G technology, while 10.0% have the opposite attitude [16]. Vocational students will encounter strong competitive pressure from undergraduates and secondary vocational students in the job hunting competition, which will correspondingly increase the psychological pressure of vocational students and trigger their anxiety, compulsion, and other psychological symptoms. Consumer insights side by side reflect the depth of development of the 5G industry and may help investors better understand the impact 5G may have on society and the business environment. Most of China's focus in the initial phase of 5G construction is on enhancing broadband services to support 5G personal application scenarios, specifically, HD video, augmented reality (AR), virtual display (VR), etc. As the 5G ecosystem matures, wider network deployment may bring clearer business models and revenue opportunities, which will also bring numerous benefits to the children's piano education industry.

At present, many piano training institutions invite famous teachers domestically and internationally to record high-quality teaching videos for piano children to learn, and at present, students generally use mobile phones or tablet computers when watching these teaching videos, to learn the relevant content as a spectator's perspective. I found through observation that because of the young age of children, their attention is not easy to focus in the process of watching teaching videos as they often get distracted by external visual and auditory factors. However, if a child uses a VR device to learn from a specially recorded instructional video, the situation may be very different. When children wear VR devices, they are temporarily separated from the real space, and their perspective changes from that of a spectator to that of an immersive learner who is directly immersed in the learning activity and can more easily focus on understanding the teacher's intentions, leaving some distractions behind. In addition, the visual experience of VR imaging will be more stereoscopic and clearer, the audio is also better than mobile phones or tablets and other computer devices, and the teacher's detailed movements and expression in the video are more likely to infect the children, thus receiving a more desirable teaching effect [17].

To improve the initiative and entertainment of piano children in learning the piano, many online teaching software has developed piano games. It can help students to shape a more positive and correct world outlook and values, to fundamentally give play to the educational function of music for students' ideology and morality. I found that most of the piano games use the keyboard form of the piano, with nonstop tracks, according to some hints to play. In the beginning, piano children are more interested, but the effect is limited due to the single form of poor attraction. The game has a great auxiliary role in stimulating children's interest and playing their imagination, and VR is a very important application directly on the game; if the children's piano games developed into a VR effect, find a balance between the game scene and the real scene and enhance the experience and the fun of the game, so that it will be able to continue to attract children, as shown in Figure 1.

Rhythmic tempo is the basic pace at which musical events move forward. Specifically, it is the number of unit beats contained in a unit of time as the musical notes flow forward, usually expressed in beats per minute (bpm). Based on the content and style of the piece, the rhythmic tempo is generally often divided into three categories: slow, medium, and fast, and the rhythmic tempo under each specific classification is not fixed. In the actual performance and singing, the tempo can also be changed appropriately according to the understanding of the musical piece. Different rhythmic tempos carry musical information of different arousal intensity and different perceptual density and therefore also convey and evoke different emotional and affective experiences. For example, rap music often has a fast tempo to express a strong personality and attitude, while folk songs usually have a slow tempo to express the mood of praise or chant. The tempo within the same piece can also change depending on the emotional expression or narrative tone. The position of the sound played by students in the entire melody texture is constantly changing, just like the frequent changes of human social roles. Although it is the protagonist, it may also become a supporting role for a period. Tempo affects the expressiveness and infectiousness of music in an extremely important way; therefore, perceiving the tempo characteristics of music is important for understanding the emotional processing characteristics of music appreciators.

While controversy has emerged regarding the physiological study of musical rhythmic tempo, research has not yet ceased to explore the neural mechanisms of rhythmic tempo as an important variable of emotion regulation and motor arousal. EEG studies have found a significant correlation between the rhythmic speed of the music and an individual's desire to move. While an individual listens to music, changes in rhythmic tempo evoke movement-related activation in the individual's brain, as evidenced by a significant correlation with the intensity of event-related desynchronization EEG in the left motor cortex channel. Personal growth is the most important and most neglected by educators, as music teachers place great emphasis on the growth of their students' musical knowledge base (which seems to be the only instructional goal) and can neglect the growth of their students' musical psychology, musical emotions, and personal values. Oftentimes, these qualities are perceived by teachers as growing naturally without special instruction, when in fact they do not. Many students who enter society without the protection of the school show the bipolar phenomenon of being too selfish or losing themselves and are unable to get along with people positively and freely in society and have weak psychological tolerance [18]. Integrated education believes that to develop the whole person, all aspects must be considered, and the way to promote personal growth is to increase self-awareness. Teachers can give the initiative to the students, which is easier to do in high school music appreciation classes because high school students often have strong musical personalities, and students will express themselves to the fullest when they are comfortable with this approach, and their creativity will amaze music teachers, as shown in Figure 2.

Interaction music education believes that good and effective relationships between teachers and students, between students and teachers, and between teachers and students and music should be based on intersubjectivity, dialogue, and understanding and the context of the living world. Inclusive education focuses on the correlation and integration of various factors and believes that the classroom should connect students' learning content with their life experiences and connect the teacher-student relationship with the interpersonal relationships in the classroom so that students can enhance their real-life living quality in the classroom and thus react to the classroom. In an engaged music classroom, teachers open themselves and their students as freely as possible to build good relationships, and teachers and students grow and heal in a comfortable and loving relationship with each other. Psychological fluency experiences can easily occur during music appreciation, and teachers can actively create the conditions that produce them, but it does not mean that fluency experiences must occur for teachers and students in every class; it is simply a way to help make the classroom more interesting and livelier and is not an end.
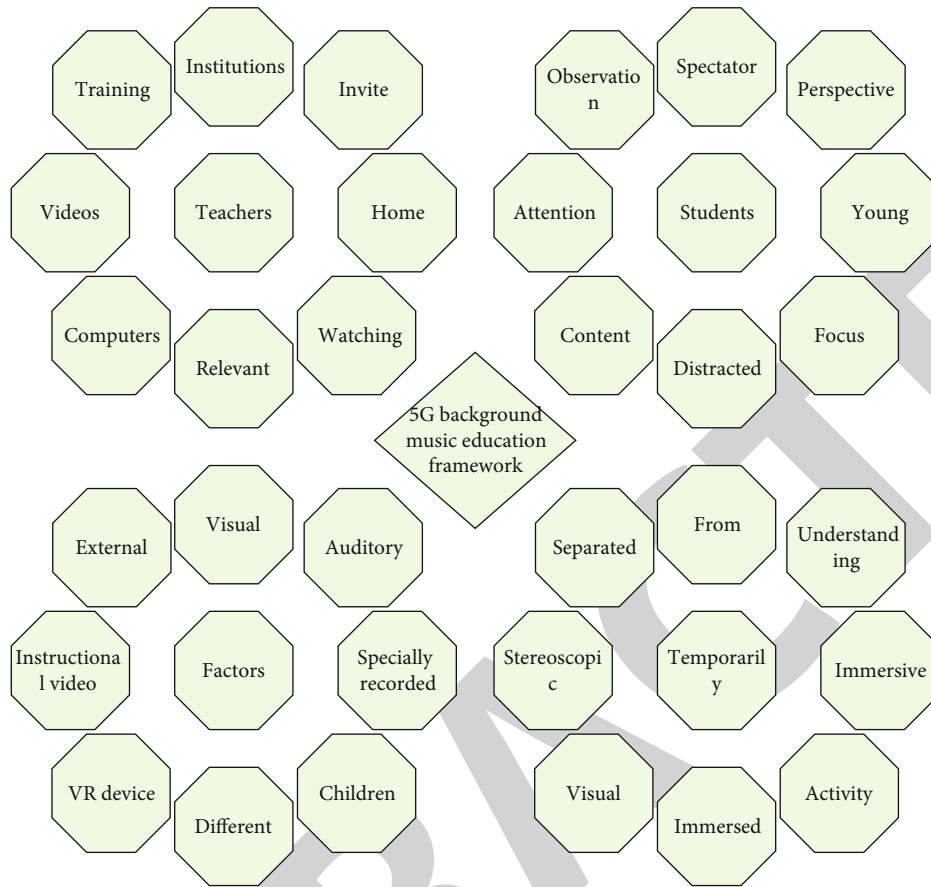
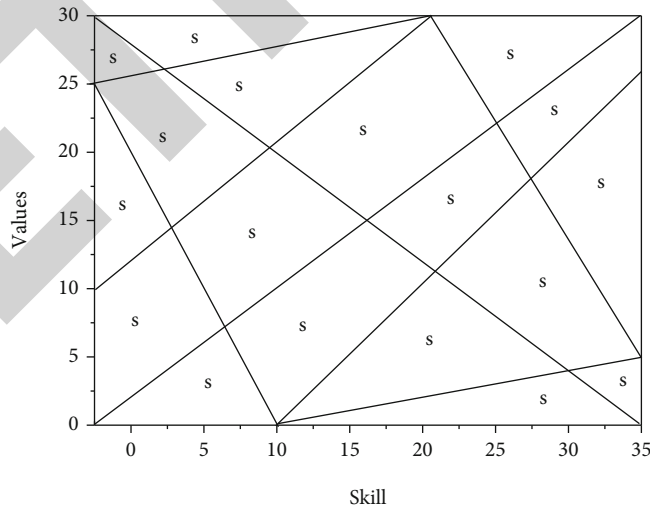Figure 1: 5G background music education framework.



Figure 2: Impact of challenge and skill level on a smooth experience.

The difficulty of the learning content taught by the teacher and the aesthetic level of the musical pieces played in the class can be varied, but it is best to have a single goal for the class topic so that students know exactly what they need to master in the class. It is also important that the knowledge taught by the teacher and the musical pieces played during the classroom conduct are intertwined and not spread all over the place. Be able to summarize experience in future teaching practice, seek appropriate teaching methods, and lay the foundation for good education in schools and families. In addition, teachers need to give positive feedback to students' responses, or they can leave it up

to students to set goals so that they can achieve internal reward mechanisms. Self-esteem and self-efficacy are two characteristics of the positive self. Some students and teachers have low self-esteem and low self-efficacy due to environmental and family influences, and the way to improve their self-esteem and self-efficacy is through unconditional self-acceptance and unconditional affirmation of self-worth, which can lead to renewed self-confidence. Positive motivation is the force behind the positive self, which allows people to transcend external motivation and external evaluation and dominate their lives with internal motivation and internal evaluation systems to unlock their potential and reap the rewards of their positive self. Achieving an engaged music classroom requires teachers and students to have independent and positive personalities, that is, positive selves, to achieve effective engagement in the classroom, so that teachers and students unleash internal motivation to learn and teach and engage in objective self-evaluation, creating a virtuous cycle of engagement and learning (teaching). Therefore, applying the concepts of positive self and positive motivation to the music classroom is of great value in achieving an engaged music classroom and in improving the personalities of teachers and students.

*3.2. Analysis of the Application of Music Education to Improve the Mental Health of College Students.* Music teachers need to have unconditional self-acceptance of themselves and unconditional positive regard for their students. Only by doing these two things can teachers affirm the value of themselves and their students regardless of their excellence or lack of excellence. To provide certain reference materials for the reform and development of music education in higher vocational colleges, according to the needs of this research, the author read a lot of literature and the design of the research is guided and inspired by these references. In music appreciation classes, students' music perception and appreciation are independent of their academic performance in cultural classes, but teachers always show special preference for well-behaved students with good academic performance [19]. This is when teachers should treat students equally and believe that each student has its unique strengths. The teacher-student relationship and student-student relationship at this time will be equal, warm, and kind, and teachers and students will open their hearts and minds to the satisfaction of the need for love and belongingness, with such a free ideological foundation and solid emotional backing to embark on the road to self-actualization. In music appreciation classes, students often have their own opinions about musical works, but if teachers keep on making students learn music that does not interest them, they will get tired. This is when some clever teachers will use small rewards to motivate students to learn, which should not be used often because the development of students' independence is what is most important. Other music teachers often use their authority to shock students and overwhelm them with their learning, when external motivation accounts for a large part of the student's learning, and once the external motivation withdraws, it becomes difficult for the student to continue with this area of learning. Teachers need

to start with students' points of interest and emotional experiences so that students are motivated by the internal motivation to drive their learning and give recognition.

Teachers also need to develop their intrinsic motivation; music teachers have a myriad of reasons for loving their work. In preparing lessons, teachers look for diverse and vivid musical pieces based on the theme and the interests of the teacher and students and engage in shallow to the deep excavation of meaning, anticipating a wonderful exchange of ideas with students unlike any other, a wonderful experience that cannot be felt by numbly imitating someone else's painting or coping casually. The human psyche is so complexly constructed that sometimes one does not even understand one's mental inertia, let alone the correctness of others' evaluations of oneself, making a strong internal evaluation system more valuable to personal development and mental health than external evaluations. High school students have been listening to their teachers since kindergarten, and they have their judgments about their teachers' personalities and teaching abilities. High school students, in turn, are in the developmental stage of adolescence and are prone to evaluate music teachers' private lives, appearance, and other aspects of their lives. This requires teachers to establish a strong internal evaluation system and to use a filter for external evaluations so as not to punish students after being vilified by their words. In addition, teachers need to encourage students to use independent choice, independent learning, and independent evaluation in the learning of musical works to establish an internal evaluation system for students, as shown in Figure 3.

As we all know, the current society is one in which the competition for talents is extremely fierce. And higher vocational students are forced to choose vocational colleges due to the frustration of the college entrance examination. This will easily lead to a certain sense of failure and low self-esteem at the beginning of their schooling. After entering school, if their academic performance cannot be effectively improved, it is easy for them to become pessimistic and disappointed about their future [20]. It has become a direction worth exploring. Through investigation and empirical research, it provides some theoretical and practical reference materials for the reform and development of music teaching in colleges and universities. After a long time, it is easy to become depressed. In the competition of job hunting, higher vocational students will encounter strong competition pressure from undergraduates and middle vocational students, which will increase the psychological pressure of higher vocational students and trigger their anxiety and compulsive psychological symptoms. With low self-esteem, depression, anxiety, and other negative emotions, higher vocational students are prone to self-exclusion, which will easily lead to a "paranoid" way of thinking and even lead to a sense of hostility and destructive desire for the surrounding environment and the whole society.

Through a school-year experiment in music psychological adjustment, the mental and emotional states of students A and B were significantly improved. From teacher subjective observation, A's performance changed from being absent-minded at the beginning of the activity to being able
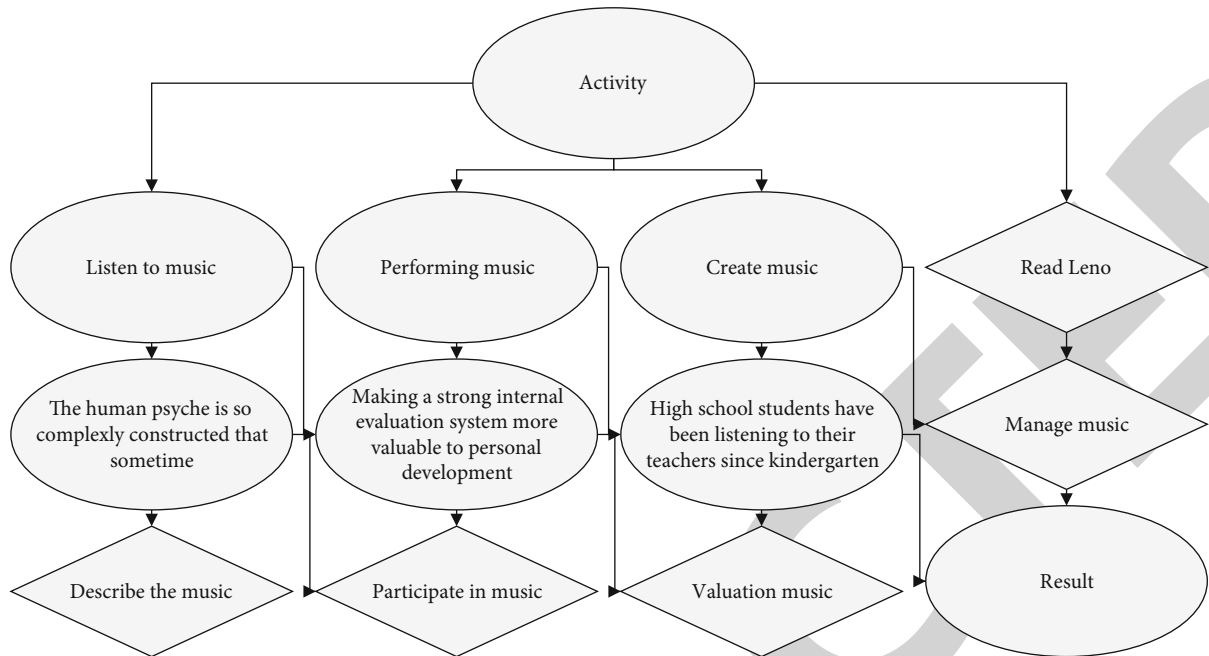
Figure 3: Materials for music education.

to concentrate on the music activity at the end of the activity and to collaborate and cooperate with classmates to carry out various rhythmic exercises. From teacher Y's subjective observation, B's performance also changed from sitting silently with her head down at the beginning of the activity to being able to sing the songs in public and to complete the rhythm exercises smoothly through communication, discussion, and collaboration with her classmates towards the end of the activity. It can be said that through one year of music psychological adjustment teaching, A and B's external mental appearance has been greatly improved, as shown in Figure 4.

From the research and experimental data presented above, music can play a significant role in psycho-emotional regulation and, to a certain extent, psychological healing for the appreciators. The author believes that this is largely due to the multimedia music context, rhythmic exercises, and the "mini-music salon" design. The multimedia teaching environment provides students with multiangle audio-visual stimulation and creates a suitable atmosphere and mood for music psychological adjustment, which provides a convenient and basis for music teaching experiments to play a psychological adjustment role for students; due to the design of physical rhythmic teaching, students get audio-visual stimulation and at the same time transform this stimulation into body movements, so that they can strengthen the psychological therapy from the perspective of sight, sound, touch, movement, and feeling. In this way, the positive stimulating effect of music on students' nervous system can be reinforced from the multidimensional perspectives of sight, sound, touch, movement, and feeling, thus greatly strengthening the effect of music psychological regulation; as the "mini-music salon" contains many teacher-student, interactive, and collaborative activities, students can

share their psychological feelings of listening to music with others in time while feeling the charm of music [21]. The teacher-student relationship has become a friend relationship, and music appreciation has become a meaningful music sharing. A class makes the author and the students linger. This is the charm of the social music classroom. This not only invariably pulls them out of the narrow, closed space of their minds but also allows them to discover their potential, enhance their self-confidence, appreciate themselves, and learn to appreciate others in the process of collaborative music making activities. In this way, it can help students shape a more positive and correct worldview and values, thus fundamentally bringing into play the educational function of music for students' ideology and morality.

The next step in the development of Internet piano education follows the development of 5G technology for the transformation and upgrading of traditional piano instruments, thus realizing the functions of diversified dissemination of educational content, enhanced human-computer interaction, and data collection. An intelligent piano can lead piano teaching into the era of big data, through the collection of data on massive teaching situations, student playing, and big data analysis of problem solutions. Students learn and express in a more relaxed and enthusiastic way, making the classroom atmosphere more positive and harmonious, teachers and students' psychological well-being is higher, and the road to self-realization is smoother. The emergence of Internet smart instruments creates better conditions and higher requirements for teachers, who need to learn to solve problems precisely with the help of the device. Piano teaching should not be limited to problem identification, error correction, and single-loop learning routes. Teachers and students in the future classroom can always find errors and correct them based on data collected over
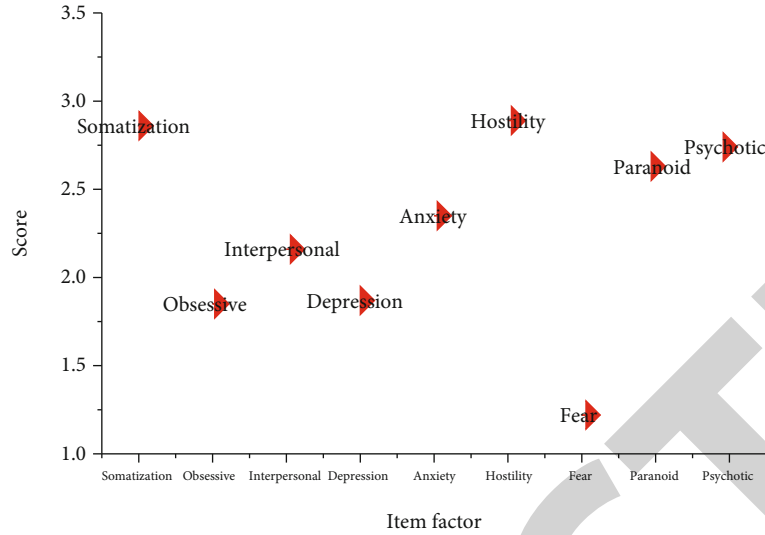
FIGURE 4: Self-assessment measures before and after the music teaching experiment.

the Internet and avoid the drawbacks of lagging problem solving. At the same time, teachers can use the data collected on students' playing style, effectiveness, and points of interest to give them immediate feedback, as well as to use the data to develop more effective learning strategies and make timely and necessary adjustments. Therefore, in the Internet era, piano teachers need to keep exploring how to use smart devices to enable students to grow their interest in piano, increase their musical imagination, increase their artistic creativity, etc.

## 4. Analysis of Results

*4.1. 5G Background Music Education Results.* Music teacher characteristics are the key to teacher-directed classroom emotions. Each music teacher has developed his or her unique temperament due to the differences in their respective lifeworld, which inevitably makes some teachers have a pessimistic, impatient, selfish, or confused state of mind, while students have a strong ability to imitate, and their main sources of imitation are their parents, teachers, and classmates. Therefore, if teachers present a negative mental state and the negative emotions are transmitted to the students, the students will be affected at the conscious or subconscious level and even reflected themselves. Positive thinking, optimism, altruism, and self-actualization of music teachers can effectively prevent or mitigate the formation of this phenomenon. Most psychologists agree that positive thinking allows people to find their most peaceful and lucid state, keeps them from being overly influenced by the outside world, enhances their connection to their bodies, and improves concentration, and chronically positive depressed people are effective in reducing depressive symptoms. Music teachers who are subjected to the daily onslaught of ample musical emotion can try this approach to balance their emotions and allow themselves to improve their control and stay awake in uncontrollable classroom environments. On the

other side, it is the basis for developing other positive qualities, as shown in Figure 5.

Optimism, on the other hand, is a direct source of positive emotions, and anyone who possesses the quality of optimism is not bothered by excessive rumination, which makes one more focused on the present moment and confident about the future. Music teachers who possess the quality of optimism remain energetic and creative, actively enjoying their classroom interactions with students and music, while students are often invisibly infected by their teachers and their energy and creativity are driven. Establish an equal and harmonious relationship between teachers and students, break the traditional boundaries between teachers and students at higher and lower levels, emphasize the initiative of students, develop students' creativity and personality, and create a positive and relaxed classroom environment. It is indisputable that the so-called different teachers teach different students, and this difference is largely determined by the teacher's teaching methods and his or her learning and temperament, with emotion being an important determinant of temperament output, as shown in Figure 6.

On the one hand, teachers should boldly use the space and scenario environment created by 5G technology to design challenging course content to constantly maintain students' interest in learning, appropriately increase students' opportunities to choose dynamic content for Internet piano teaching, and continuously improve the learning experience. On the other hand, teachers should reasonably choose piano teaching content, focus on the articulation of the Internet curriculum at each stage, and consider students' ability to understand the Internet to adapt to the relatively abstract technological applications of 5G. Make a closer connection between the piano classroom online and offline occur, and avoid course content fragmentation that detracts from the goal of authentic Internet piano teaching. In addition, teachers should combine the whole process of students' online and offline learning to establish a multiple-cycle evaluation system, using students themselves as a reference for
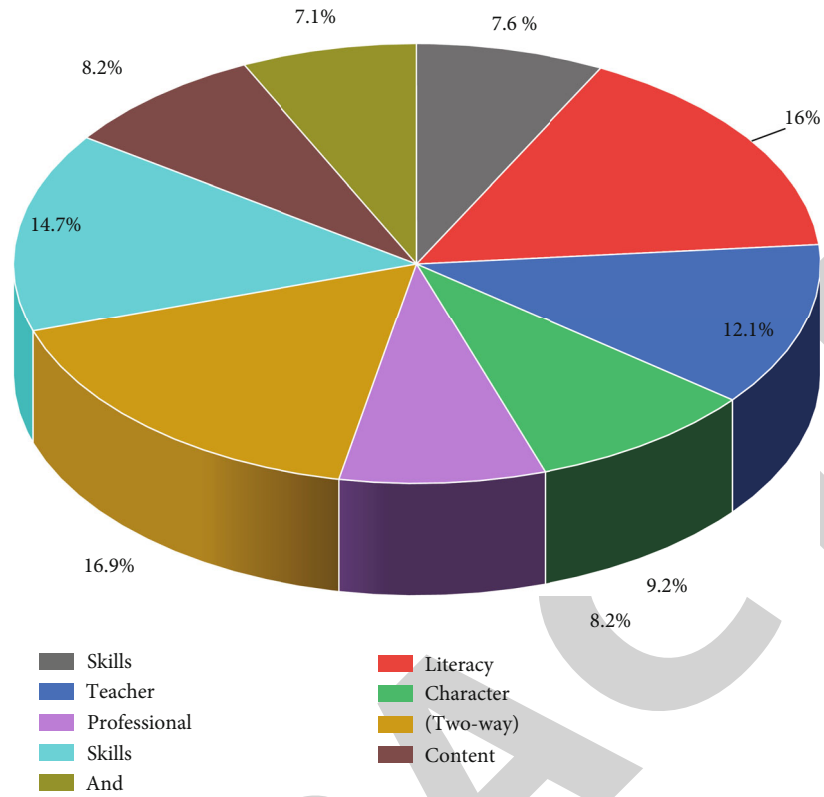
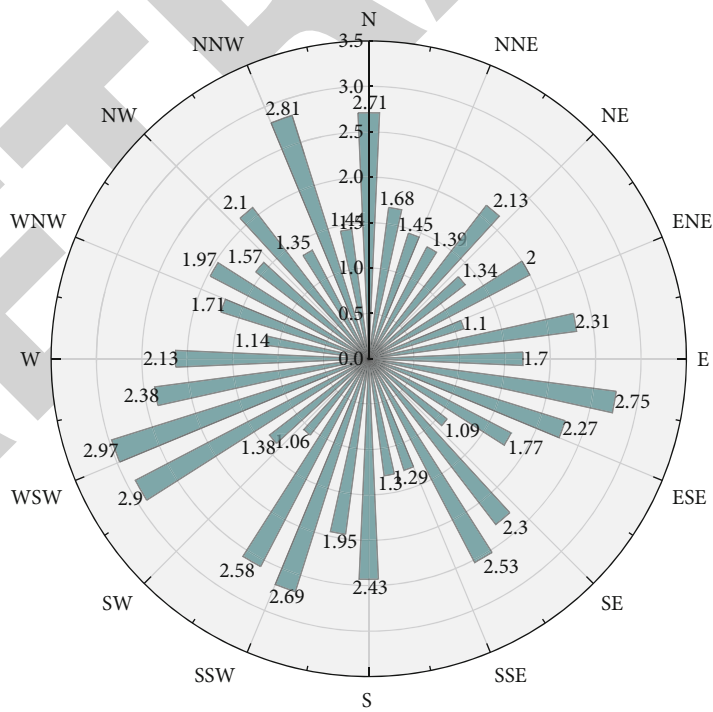FIGURE 5: Students' expectations of music teachers.



FIGURE 6: Mean distribution of factors shaping music preferences.

evaluation, to help students clarify whether they have reached their goals and encourage them to build self-confidence.

Various musical activities are held so that participants can enjoy the joy of success and recognition of self, which is also a physical and mental pleasure process; at the same time, music relies on the dynamic form of sound to make people physiologically and psychologically inductive and can also regulate people's emotions: joyful music appreciation makes students' spirits happy and eliminates unhappiness; slow and quiet music can make people get positive rest. Data shows that 73.0% of netizens surveyed are optimistic about the future development of 5G technology, while 10.0% of netizens surveyed hold the opposite attitude. All the above are concrete manifestations of the value of the physical health-enhancing function of music education. Finally, the international understanding and communication skills of music education are also reflected in the ability to deal appropriately with the musical and cultural prejudices and musical and cultural attitudes held between teachers and students. It can avoid generating the idea that the music culture of other countries is more representative of the upper-class culture than our music culture. At the same time, the richness and diversity of music around the world bring opportunities for international understanding, cooperation, and peace.

*4.2. Results of the Application of Music Education to Improve College Students' Mental Health.* In the first part, a practice experiment, subjects listened to four pieces of music that were not experimental material before entering the NMR laboratory and were required to respond to randomly presented novel stimuli with keystrokes; the purpose of this exercise was to ensure that subjects avoided falling asleep throughout the music appreciation process. In the second part, the emotional processing task in the NMR environment, the subjects entered the NMR laboratory and completed a music appreciation task of 100 music clips, each played twice in a cycle, while awake. In the third part, the emotion evaluation task, subjects entered the behavioral laboratory after leaving the MRI lab and after sufficient rest to complete pleasantness and arousal evaluations of the same 100 music clips. Further comparisons revealed that women activated the right postcentral gyrus, left frontopolar area, and left cerebellum more strongly in 6/8-beat rhythmic music compared to men, as shown in Figure 7.

The interval dictation examines students' ability to perceive intervals and the number of steps, tones, nature, and harmony of intervals; the chord dictation examines students' ability to perceive chords and the structure and different color expression of chord inversions; the rhythm dictation examines students' proficiency in rhythm types and acoustics. By playing the rhythm clip, students were asked to identify the beat and rhythm type and choose the correct item from the alternative answers; melody dictation examines students' proficiency in tonality, rhythm type, and sound; by playing the melody clip, students are asked to identify its tonality, pitch, rhythm, beat, and other information and choose the correct item from the alternative answers.
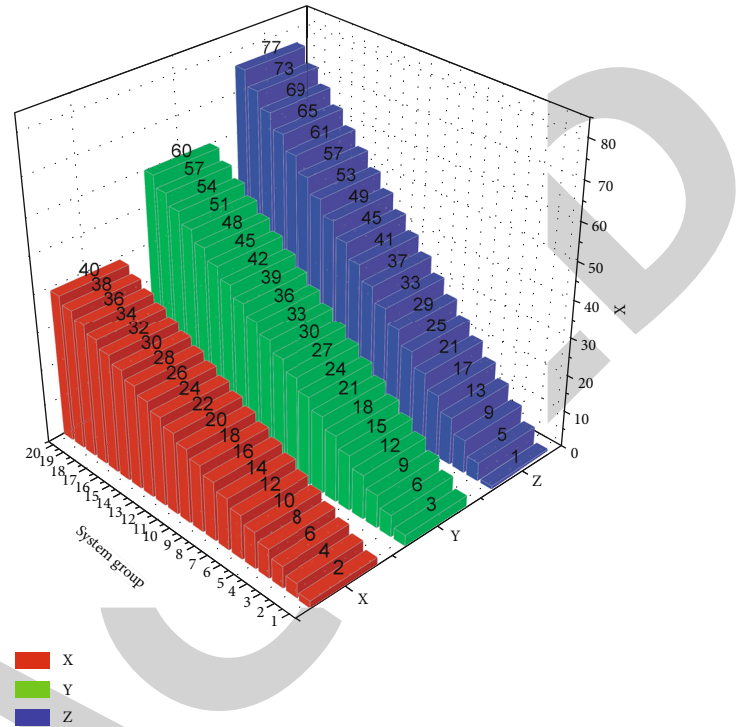


Figure 7: Brain activation of four rhythmic music types during emotional processing of music in men and women.

In the teaching practice, I found that the chord connection exercise is difficult for students and the teaching progress is slow. The main reason is that there are many kinds of chords and the composition structure is relatively complex, while the chord connection presents a multidimensional structure and contains both vertical and horizontal acoustics. In this exercise, the role of music works in the APP appreciation module can be fully utilized to help students master the chord acoustics, find a suitable listening method for themselves, and form a scientific listening habit. The above discussion is only a simple example, but the APP can also be used to deepen the listening cognition in more difficult music listening exercises. For example, in polyphonic music listening training, students can listen to separate voices individually and gradually increase the number of voices or change the way the voices are matched, instead of only listening to the whole sound, which can help students listen to the elements of pitch and rhythm and at the same time make them know the composition of instrumental ensemble music and the way the instruments are arranged so that they can have a deeper understanding of the music works, as shown in Figure 8.

Here, the focus is about the universal music education environment in schools and the professional music education environment outside of schools. School music education applies to all students, while out-of-school professional music education is only for certain students. There will be pedagogical biases in this process, and the corresponding music education environments they create will differ, but they are all the same. Music education is making efforts to perfect students. And the rhythm speed under each
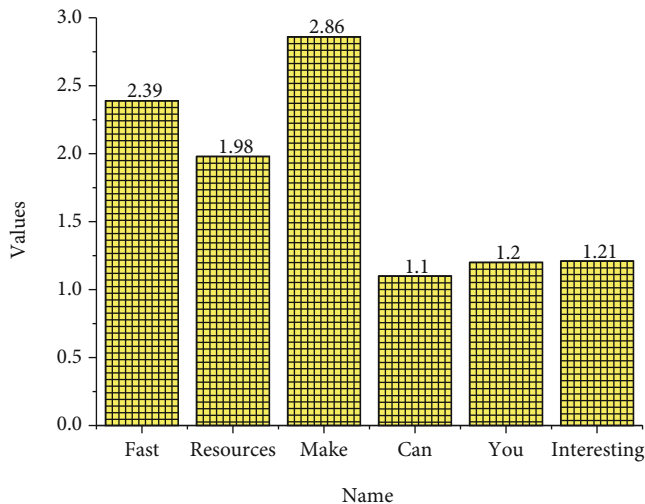
Figure 8: Advantages of musical auditory training.

category is not fixed. In the actual performance and singing, you can also change the speed appropriately according to your understanding of the musical composition. Therefore, schools must create a good environment for communication and collaboration in music education. Schools can host more events with polyphonic musical performances, because in these musical events, the position of the student's voice playing throughout the melodic weave is constantly changing, just like the frequent changes in human social roles. While it is the lead role, it may also become a supporting role for some time. In this way, the student is helped to assess himself correctly. It helps students to face more correctly the glory and success or failure in life so that they can plan their lives rationally. Due to the global information technology and the rapid changes in the music market, there is a wide variety of music, and students are invariably bombarded by social music in their daily lives and are prone to impatience, etc. Therefore, the school can use the students' meal periods to play classical music of the elegant and noble genre.

Maslow's theory of self-actualization, the highest level of the hierarchy of needs, is a lifelong pursuit, and one of the ways to achieve it is to do what one loves and is good at. The process of realizing one's potential brings one endless pleasure and a sense of accomplishment. A small number of people use parenting and companionship to realize their self-worth, but self-actualization in others can easily turn into control and end in rebellion. Therefore, self-actualization is more common through the realization of self-worth at work and the experience of happiness in life.

## 5. Conclusion

Using the technological advantages of 5G to work on enhancing interaction, improving the experience, enriching the classroom, breaking time and space restrictions, reducing learning costs, and advancing educational equity for children's piano education, I am adding rather than subtracting, seeking to cooperate rather than seeking to subvert. Positive psychology goes further by focusing on enhancing positive

emotions and positive qualities in people, pushing their lives and self-realization in a positive direction, so that the positive self, led by positive emotions and driven by positive motivation, can realize its self-worth and experience a happy life. This not only is a powerful impetus for achieving an engaged music classroom but also can have an impact on the entire life development of teachers and students. The interaction music classroom is permeated by interactions and by the various psychological activities of teachers and students. It is extremely valuable research to start with the psychological laws of teachers and students to achieve engagement. How to translate the integration of psychological laws and the concept of engagement into concrete teaching practices requires specific designs for specific courses and grade levels. While the instructional design focuses on high school music appreciation classes, it not limited to them; teachers of all music subjects at all grade levels can find ways to achieve an engaged music classroom based on their local context. It is important to expand passive music appreciation into active music physical rhythms and interactive, collaborative music-themed activities so that students can rediscover their values and abilities, reaffirm themselves, and accept themselves in the process of listening to music, discussing music, and expressing music, so that they can effectively perform the psychological regulation function of music for students and help them establish healthy, positive worldviews and values.

## Data Availability

The dataset used to support the findings of this study are available from the corresponding author upon request.

## Conflicts of Interest

The author does not have any possible conflicts of interest.

## References

[1] Y. Noh and J. Y. Ro, "A study on the service provision direction of the national library for children and young adults in the 5G era," *International Journal of Knowledge Content Development & Technology*, vol. 11, no. 2, pp. 77–105, 2021.

[2] M. Muraszkiewicz, "The synergetic impact of AI, IoT, and 5G on information literacy and education," *Zagadnienia Informacji Naukowej–Studia Informacyjne*, vol. 57, no. 2 (114), pp. 7–22, 2020.

[3] D. Xu, "Research on new English mobile teaching mode under the impact of mobile internet age," *Open Journal of Social Sciences*, vol. 7, no. 5, pp. 109–117, 2019.

[4] N. E. Alias, "The influence of computer and Internet self-efficacy on individual entrepreneurial orientation: an empirical study among Bumiputra university students in Malaysia," *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, vol. 12, no. 3, pp. 2760–2770, 2021.

[5] N. Um, "Study of Korean college students' perspectives on virtual reality game experience," *The Journal of the Korea Contents Association*, vol. 19, no. 1, pp. 152–162, 2019.

[6] M. R. Abd Samad, Z. H. Ihsan, and F. Khalid, "The use of mobile learning in teaching and learning session during the

Covid-19 pandemic in Malaysia," *Journal of Contemporary Social Science and Education Studies (JOCSSES)*, vol. 1, no. 2, pp. 46–65, 2021.

[7] S. Vashishtha and K. Singh, "Higher education: issues, challenges and suggestions," *International Journal on Integrated Education*, vol. 3, no. 8, pp. 112–118, 2020.

[8] M. Chen, Y. Cao, R. Wang, Y. Li, D. Wu, and Z. Liu, "DeepFocus: deep encoding brainwaves and emotions with multi-scenario behavior analytics for human attention enhancement," *IEEE Network*, vol. 33, no. 6, pp. 70–77, 2019.

[9] N. Y. Meng, K. C. Hei, and A. K. Palaniappan, "Gender variations in coping mechanisms used after disagreements in the home domain: the case of Malaysian youths," *Horizon*, vol. 2, no. 2, pp. 29–42, 2020.

[10] A. N. Chen, R. E. McGaughey, S. M. Zeltmann, H. K. Lu, and M. R. Lee, "How seniors in Taiwan use information technology: computer and cell phones," *International Journal of Human–Computer Interaction*, vol. 34, no. 2, pp. 166–176, 2018.

[11] S. Zupan and M. Gadpaille, "Cultural awareness among first-year undergraduate students of English and translation," *ELOPE: English Language Overseas Perspectives and Enquiries*, vol. 17, no. 2, pp. 239–254, 2020.

[12] C. G. le Prell, H. W. Siburt, E. Lobarinas, S. K. Griffiths, and C. Spankovich, "No reliable association between recreational noise exposure and threshold sensitivity, distortion product otoacoustic emission amplitude, or word-in-noise performance in a college student population," *Ear and Hearing*, vol. 39, no. 6, pp. 1057–1074, 2018.

[13] M. P. Ganguly, "The abstracts below appear in program order view the congress program," *Australian Psychologist*, vol. 53, no. 1, pp. 4–99, 2018.

[14] M. Chen, U. Challita, W. Saad, C. Yin, and M. Debbah, "Artificial neural networks-based machine learning for wireless networks: a tutorial," *IEEE Communications Surveys & Tutorials*, vol. 21, no. 4, pp. 3039–3071, 2019.

[15] B. Wang, W. Mao, and G. Li, "China's digital publishing moving towards in-depth integrated development," *Publishing Research Quarterly*, vol. 35, no. 4, pp. 648–669, 2019.

[16] N. A. Suhail, "Exploring mobile phone usage at higher education: a case study of Kampala University, Uganda," *International Journal of Computer Applications*, vol. 170, no. 2, pp. 30–34, 2017.

[17] S. Zhao, Y. Xu, X. Ma et al., "Gender profiling from a single snapshot of apps installed on a smartphone: an empirical study," *IEEE Transactions on Industrial Informatics*, vol. 16, no. 2, pp. 1330–1342, 2020.

[18] J. Abd Hamid, S. M. Shukri, and S. M. F. Azam, "Role of attitudes and demographics on the attitude towards social media: evidence from Malaysian universities," *Systematic Reviews in Pharmacy*, vol. 11, no. 1, pp. 1042–1052, 2020.

[19] M. A. Peters, O. M. Oladele, B. Green et al., "Education in and for the belt and road initiative:," *Educational Philosophy and Theory*, vol. 52, no. 10, pp. 1040–1063, 2020.

[20] P. Van Ostaeyen, C. Winter, and T. Rolbiecki, "The Islamic state's strategic trajectory in Africa: key takeaways from its attack claims," *CTC Sentinel*, vol. 13, no. 8, pp. 31–40, 2020.

[21] F. Y. Wang, P. Ye, and J. Li, "Social intelligence: the way we interact, the way we go," *IEEE Transactions on Computational Social Systems*, vol. 6, no. 6, pp. 1139–1146, 2019.