

Flipped Classroom with Virtual Reality Technology Learning Model for Chinese College Students in Psychological Education: A Need Assessment Study

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Abstract

The growing prevalence of psychological health problems, particularly depression and anxiety, among Chinese college students necessitate innovative approaches to psychological education. This research investigates the psychological education needs of college students and proposes a flipped classroom model integrated with virtual reality (VR) technology to address these needs. A needs assessment survey, employing a 16-item questionnaire with a five-point Likert scale, was conducted to collect data from 400 students selected by stratified random sampling method from 125 higher education institutions in Anhui Province. The survey explored student perspectives on textbook content, learning outcomes learning methods and technologies. Subsequently, a flipped classroom model incorporating VR technology was developed based on a review of existing literature. This model was then evaluated by a panel of five experts across dimensions of suitability, model components, and learning activities. Quantitative data from the student needs assessment and the expert evaluation were analysed using descriptive statistics. Results from the needs assessment indicated a strong consensus among students (mean scores 4.12-4.77) regarding the importance of psychological education, with 15 of 16 items receiving "strongly agree" ratings. The proposed flipped classroom model, comprising before-class, in-class, after-class and evaluation components, received high ratings from the expert panel (mean scores 4.6-5.0) across all evaluation dimensions. The experts "strongly agree" with the model's suitability and potential effectiveness. This study offers an innovative pedagogical framework for psychological health education in higher education, leveraging VR technology within a flipped classroom design to support students in managing anxiety and depression.

Keywords: psychological health education, Chinese higher education institutions, need assessment, college students, VR technology, flipped classroom, depression, anxiety

1. Introduction

1.1 Research Background

The prevalence of depression and anxiety among college students has highlighted the urgent need for innovative approaches in Psychological Health Education in China (Li et al., 2022). As mental health challenges increasingly affect academic performance and the overall well-being of college students, exploring new learning methods to make learning more engaging, practical, and impactful has gained more attention in psychological education (Kaya & Erdem, 2021). Flipped classrooms, which emphasize pre-class preparation and in-class interactive learning, have shown promise in promoting active engagement and critical thinking (Galindo-Dominguez, 2021). Similarly, virtual reality (VR) technology offers immersive, experiential learning that can simulate real-life scenarios, enhancing understanding and retention in complex topics like mental health (Bell et al., 2024). However, effectively implementing these methods requires a thorough knowledge of students' specific needs and preferences. A need assessment is critical in identifying the gaps in current teaching practices, aligning pedagogical methods with learners' needs and ensuring that innovative tools address real-world challenges (Skivington et al., 2021). Without this foundation, there is a risk of introducing methods that fail to resonate with students or achieve the intended educational outcomes. Therefore, this paper aims to investigate students' needs concerning flipped classrooms and

VR technology in psychological health education and propose an appropriate flipped classroom model that incorporates VR technology tailored to these needs. The proposed learning model seeks to improve students' understanding of depression and anxiety while bridging the gap between innovative teaching methods and their practical application, ultimately fostering more effective and inclusive educational experiences.

1.2 Research Questions

1. What are the college students' needs for psychological education?
2. What kind of flipped classroom with virtual technology learning model should be proposed to meet college students' needs for psychological education?
3. How do experts perceive the proposed flipped classroom with virtual technology learning model for psychological education?

1.3 The Challenge of College student's Depression and Anxiety Problems

Given the increasing incidence of depression and anxiety among college students, the psychological well-being of college students has become a growing concern (Li et al., 2022). Today's college students encounter unique stressors, including intense academic competition, pressure to meet high parental and societal expectations, and the uncertainties of future career prospects (Xiao et al., 2022). Furthermore, students frequently encounter a lack of individualized attention and support in large classroom settings, making it difficult to address personal learning needs or seek guidance during periods of stress (Wang et al., 2022). Additionally, cultural stigma remains a significant barrier, discouraging open discussion about mental health problems and inhibiting help-seeking behaviors (Wei et al., 2021). As a result, many students experience heightened feelings of isolation, inadequacy, and helplessness. Without proper avenues for emotional expression and support, these experiences can escalate into more severe psychological distress, particularly depression and anxiety problems (Keynejad et al., 2021). These challenges are compounded by transitions in social environments and the developmental tasks associated with young adulthood. Psychological education can foster greater self-awareness, help students identify emotional distress early, and empower them to seek appropriate support when needed (Salimi et al., 2023; Sampson et al., 2022). Hence, there is a critical need for psychological education, which equips students with the knowledge, skills and coping mechanisms necessary to understand and manage their mental health.

1.4 The Current Situation of Psychological Health Education

Psychological health education has become increasingly important in addressing the growing prevalence of mental health challenges among students. However, traditional teaching methods in this field often fail to meet the needs of modern learners (Puras, 2022). Conventional approaches, such as lecture-based instruction and rote memorization, prioritize theoretical knowledge over practical application and often lack the interactivity necessary to engage students effectively (Maqsood et al., 2021). Furthermore, these methods may not adequately address the specific mental health concerns of students, such as depression and anxiety, which require a more personalized and empathetic approach (Liu et al., 2022). Traditional methods are insufficient in equipping students with the skills and knowledge necessary to manage their mental health effectively. As Idris et al. (2021) stated, students taught through traditional approaches struggled to apply psychological concepts to real-world scenarios, limiting their ability to recognize and address mental health issues in themselves and others. This gap in practical application underscores the need for a paradigm shift in psychological health education.

Innovative teaching methods and technologies offer promising solutions for enhancing the quality of psychological health education. Flipped classrooms, for instance, promote active learning by shifting passive content delivery to pre-class activities and dedicating in-class time to discussion and application (Shan & Liu, 2021). Similarly, virtual reality (VR) technology provides immersive and interactive experiences that allow students to engage deeply with complex mental health concepts, such as the symptoms and management of depression and anxiety (Emmelkamp & Meyerbröker, 2021; Gao et al., 2022). These approaches have been shown to improve engagement, retention and the practical application of knowledge, making them well-suited for addressing the specific needs of today's students. Additionally, psychological health education must focus more explicitly on issues of depression and anxiety, as these are among the most common mental health challenges faced by students. By integrating tailored content on these topics and leveraging innovative methods, educators can foster a deeper understanding of mental health issues while providing students with actionable strategies to manage their well-being (Groenewald et al., 2024). This shift requires a concerted effort from educational institutions to embrace new pedagogical approaches and invest in technology-driven solutions prioritising student-centred learning.

1.5 The Application of Flipped Classroom in Psychological Health Education

The flipped classroom approach has emerged as a transformative educational model relevant to higher education. This method shifts traditional teaching dynamics by introducing students to course content before class and utilising in-class time for collaborative activities and deeper discussions (Sosa Díaz et al., 2021). In China, the rapid increase in mental health challenges among university students, including depression and anxiety, has highlighted significant gaps in traditional psychological health education. Idris et al. (2021) claimed that conventional lecture-based methods often lack interactivity and fail to address individual emotional needs, exacerbating feelings of isolation and stress among students. The flipped classroom offers a dynamic, student-centered alternative, fostering engagement and creating an environment conducive to emotional support and mental well-being (Atwa et al., 2022).

One of the key strengths of the flipped classroom in psychological health education is its ability to engage students while addressing their mental health needs actively. Pre-class resources, such as videos, readings, and self-assessment tools, enable students to familiarise themselves with psychological theories and techniques at their own pace. This preparation allows for a more meaningful application of concepts during class through group discussions, case studies, and role-playing exercises. These interactive sessions promote a deeper understanding of mental health topics and provide a platform for peer support, which is crucial in reducing feelings of loneliness and fostering emotional resilience (Atwa et al., 2022). Additionally, the flipped classroom creates opportunities for personalised guidance, as educators can devote class time to identifying and addressing individual students' concerns and offering tailored advice and interventions (Birgili & Demir, 2022). This approach is particularly effective in managing symptoms of depression and anxiety, as it empowers students to participate in their mental health journey actively.

The efficacy of the flipped classroom in improving mental health outcomes among university students has been supported by empirical studies, such as Cevikbas & Kaiser (2023) conducted a study demonstrating that students who participated in flipped classroom-based psychological health courses experienced a significant reduction in self-reported anxiety levels and significant improvements in emotional regulation skills. Similarly, Fructuoso et al. (2023) found that incorporating mindfulness training and stress management techniques into flipped classroom activities led to a noticeable decrease in depressive symptoms. These findings highlight the potential of this approach to bridge the gap between theoretical knowledge and practical application, equipping students with essential coping strategies and fostering a supportive learning environment. By prioritising active learning, individualised support and practical skill-building, the flipped classroom model not only addresses the academic needs of students but also plays a critical role in enhancing their overall mental health and well-being (Cevikbas & Kaiser, 2023). Given these benefits, the flipped classroom is essential for modernising psychological health education in China's higher education system.

The Rain Classroom platform is highly suitable for the flipped classroom model because it facilitates pre-class preparation, interactive in-class activities, and personalised feedback. Flipped classrooms emphasise active learning by delivering instructional content online before class, allowing in-class time to focus on discussions, problem-solving, and collaboration. Rain Classroom supports this model by enabling teachers to share multimedia materials and quizzes beforehand, ensuring students are well-prepared. Its real-time interaction tools, such as polls and quizzes, enhance engagement and participation during class. Additionally, the platform's learning analytics provide valuable insights into student progress, allowing for tailored teaching strategies. Its integration with WeChat ensures accessibility and ease of use, making it convenient for teachers and students. Studies have shown that Rain Classroom improves academic performance, increases engagement, and is well-received by students, highlighting its effectiveness in supporting flipped classroom learning. The rain classroom platform (雨课堂) can be downloaded at <https://www.yuketang.cn>.

1.6 The Application of VR Technology in Psychological Health Education

Virtual Reality (VR) technology has emerged as a groundbreaking tool across various domains, including education. By creating immersive, three-dimensional environments, VR allows users to interact with simulated scenarios that mimic real-world settings (Fitria, 2023). This technology facilitates experiential learning by enabling students to engage in lifelike experiences previously inaccessible in traditional educational settings (Raja & Priya, 2021). In psychological health education, VR provides an innovative platform for fostering emotional awareness, practising coping mechanisms, and understanding complex mental health concepts in a safe and controlled environment (Pira et al., 2023). The rapid advancement and accessibility of VR technology have made integration into higher education systems globally, including in China, increasingly viable.

The integration of VR technology into educational settings has revolutionised traditional learning methodologies,

offering immersive and interactive experiences that significantly enhance student engagement and understanding. In China, the increasing prevalence of mental health issues among university students, including depression and anxiety, has underscored the limitations of conventional psychological health education (Okoro et al. 2024). When integrated with innovative teaching methods such as the flipped classroom, VR technology provides a promising solution to address these challenges. By creating realistic simulations and experiential learning environments, VR enables students to practice coping strategies, enhance emotional regulation, and build resilience in a controlled and safe setting (Lin et al., 2023).

Furthermore, one of the key advantages of integrating VR technology into flipped classroom models for psychological health education is its ability to provide highly immersive and personalised learning experiences. In the flipped classroom model, students access preparatory materials, such as video tutorials or articles, before class, allowing in-person sessions to focus on application and interaction (Dafun et al., 2024). When combined with VR, this model becomes even more effective. Pre-class VR modules can simulate real-life stressors or social scenarios, helping students recognise and address emotional triggers in a practical context (Lin et al., 2023). During classroom activities, educators can use VR-based group exercises to encourage collaborative problem-solving and peer support, which are critical for reducing feelings of isolation and anxiety (Guo, 2022). This approach deepens students' understanding of psychological concepts and equips them with practical skills to manage mental health challenges.

The potential of VR technology in enhancing mental health outcomes among students, Zhong et al. (2024) claimed that integrating VR simulations into psychological health courses significantly reduced self-reported anxiety levels and improved students' ability to regulate their emotions. Additionally, Mills et al. (2023) demonstrated that VR-enhanced mindfulness training, when incorporated into flipped classroom settings, significantly decreased symptoms of depression and increased students' sense of well-being. These findings highlight the transformative impact of combining VR technology with the flipped classroom model in addressing the mental health needs of university students in China. This integrated approach represents a critical advancement in modern psychological health education by fostering active learning, creating immersive experiences and offering individualised support.

2. Method

This study was divided into two phases, the first phase, involving a needs assessment survey to identify the requirements of psychology students in higher education institutions. In 2024, there were a population of 1.6 million college students in Anhui Province China. To determine an appropriate sample size, the researcher utilized Taro Yamane's formula (Umar & Wachiko, 2021), yielding a target sample of 400 respondents deemed representative of the overall population. A stratified sampling technique was implemented to mirror the distribution of higher education institutions within Anhui Province, comprising 125 institutions: 47 (37.6%) classified as regular universities and 78 (62.4%) as vocational colleges. Consequently, a proportionate allocation of participants was achieved, with 150 students (37.6%) randomly selected from regular universities and 250 students (62.4%) randomly selected from vocational colleges. A 16-item questionnaire was designed with a five-point Likert scale (5 = Strongly Agree to 1 = Strongly Disagree) to assess student needs across four key areas: textbook content, learning outcomes, learning methods and technologies. A pilot study involving 30 students has also been conducted to test the questionnaire's reliability by Cronbach's alpha, yielding values between 0.85 and 0.93, which confirmed its internal consistency and suitability for large-scale data collection. In order to overcome geographical constraints and ensure broad accessibility during the data collection period from January 10, 2025, to January 20, 2025, the questionnaire was deployed using the Questionnaire Star platform, and the survey link was distributed through social media channels.

In the second phase, a flipped classroom model was proposed based on the literature review and the results of the student needs. Furthermore, five experts were selected by purposive sampling methods with criteria: 1) who were from the field of educational technology, educational psychology, instructional design and teaching; 2) having teaching experiences for at least 5 years; 3) having teaching experiences with flipped classroom methods or VR technology to evaluate the proposed flipped classroom with VR technology learning model.

Descriptive statistics were used to analyse the obtained data. Indicators such as mean and standard deviations (SD) have been analysed. Furthermore, the means have been analysed with the interpretation of agreement level: Strongly disagree (1.00-1.80); Disagree (1.81-2.60); Neither/Nor agree (2.61-3.40); Agree (3.41-4.20); Strongly agree (4.21-5.00) from Nyutu et al. (2021).

3. Results

3.1 Result of Student Needs

The researcher presented participants' perspectives on various aspects of psychological education, including textbook content, learning outcomes, learning methods and technologies. Details are shown in following Table 1.

Table 1. Summary of Student Needs

Aspects	Items/To what extent do you agree with the following statements	SD	Mean scores	Level
Textbook content	The content of the current psychological textbooks is uninteresting.	0.63	4.52	Strongly agree
	The current psychological textbook contents are useless.	0.72	4.12	Agree
	The contents of the current psychological textbooks are difficult.	0.68	4.43	Strongly agree
	I am not satisfied with the current psychological textbooks.	0.72	4.20	Agree
Learning outcomes	Psychological courses will help me to overcome depression in my life and studying.	0.59	4.67	Strongly agree
	Psychological courses will help me overcome my life anxieties and study.	0.55	4.75	Strongly agree
	Psychological courses will help me to achieve good achievement	0.60	4.57	Strongly agree
	Psychological courses will let students satisfied	0.59	4.66	Strongly agree
Learning methods	I need a learning method that allows me to learn online	0.64	4.56	Strongly agree
	I need a learning method that allows me to learn on-site	0.59	4.46	Strongly agree
	I need a learning method that allows me to experience scenarios related to psychological issues	0.57	4.63	Strongly agree
	I am not satisfied with the current learning methods	0.70	4.35	Strongly agree
Technologies	VR technology is useful in the learning process of psychological courses	0.55	4.77	Strongly agree
	Using the online learning tool is useful in the learning process of psychological courses	0.56	4.72	Strongly agree
	I am willing to use mobile devices in the learning process of psychological courses	0.57	4.68	Strongly agree
	I am willing to try more technologies in the learning process of psychological courses	0.59	4.65	Strongly agree

Participants expressed significant dissatisfaction with current psychological textbooks, describing them as uninteresting ($mean = 4.52$), not very useful ($mean = 4.12$) and difficult to understand ($mean = 4.43$), with a strong consensus that the content is unmanageable and fails to meet their expectations ($mean = 4.20$). These findings indicate a pressing need for more engaging, comprehensible and practical textbook content that aligns with learners' needs and expectations. Despite these shortcomings, psychological courses are regarded as impactful, with participants agreeing to contribute to personal and academic growth. Specifically, these courses were seen as effective in helping students manage depression ($mean = 4.67$) and anxiety ($mean = 4.75$), addressing critical mental health concerns while also fostering better academic achievement ($mean = 4.57$) and overall satisfaction with learning experiences ($mean = 4.66$). Underscores the importance of psychological education in promoting emotional well-being and academic success.

When evaluating learning methods, participants strongly preferred modern, flexible and interactive approaches. Online learning methods were highly favoured ($mean = 4.56$), while on-site learning also received significant support ($mean = 4.46$), reflecting a desire for blended learning options that combine the benefits of both modalities.

Scenario-based experiential learning garnered even stronger agreement ($mean = 4.63$), emphasising the value of practical, real-world applications in understanding psychological concepts. However, dissatisfaction with current learning methods ($mean = 4.35$) highlights a gap between existing practices and participants' expectations for more engaging and interactive strategies, indicating the need for innovative teaching approaches that better align with learners' preferences and enhance their educational experiences.

Technology integration in psychological education received overwhelming support from participants, with virtual reality (VR) technology being rated as the most effective tool ($mean = 4.77$). Online learning tools ($mean = 4.72$) and mobile devices ($mean = 4.68$) were also highly beneficial for enhancing the learning process. Furthermore, participants expressed a strong willingness to adopt additional technologies in their education ($mean = 4.65$), demonstrating a clear preference for leveraging innovative solutions to improve the delivery and engagement of psychological courses. These findings highlighted that technology has been perceived as a critical role in modernising psychological education, making it more accessible, interactive, and effective in meeting the diverse needs of learners. Addressing these areas of textbook content, learning methods and technology integration can significantly enhance psychological education's overall quality and impact.

3.2 Result of Proposed Flipped Classroom with Virtual Technology Learning Model

The class was structured into three sessions: before, during, after class and evaluation. The pre-class session was conducted online through the Rain Classroom platform, where teachers posted homework, announced groupings and assigned responsibilities. Students were required to organise online discussions, share psychological issues of interest, and refine their lists under the guidance of group leaders. Teachers collected these issues to address them during the in-class session, providing responses or facilitating peer discussions. Students accessed manuals, groupings, and reading materials through the platform, with unsolvable problems being communicated to the teacher for in-class resolution. The in-class session, lasting 45 minutes, was conducted offline. It began with a 5-minute review of the reading material using Rain Classroom to refresh students' memory, followed by a 25-minute lecture where the teacher explained key knowledge points, addressed pre-class questions and discussed psychological issues from the students' lists. The final 15 minutes involved using VR equipment to simulate psychological scenarios, allowing students to experience, vent and release emotions. After class, the teacher facilitated an online discussion about the VR experiences through Rain Classroom, prompting students to reflect, share opinions and ask further questions while reminding them to complete their homework in a timely manner. At the end of the evaluation section, the teacher will conduct tests to measure the students; anxiety, depression, course satisfaction and learning achievement final test to find the effectiveness of the learning model. The detailed model is shown in following Figure 1.

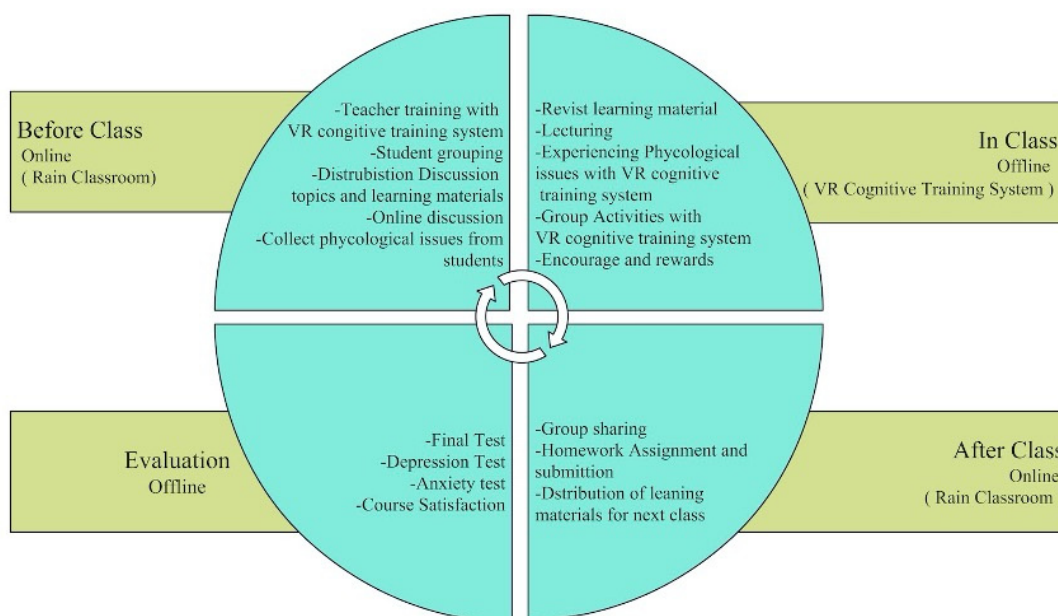


Figure 1. Proposed Flipped Classroom with VR Technology Learning Model

3.3 Result of Experts' Opinion Towards the Proposed Flipped Classroom with Virtual Technology Learning Model

The descriptive statistics of the survey conducted with five experts to evaluate the VRFCR (Virtual Reality Flipped Classroom Research) Model reveal consistently high ratings across all 13 items, with means ranging from 4.6 to 5.0 and standard deviations between 0.0 and 0.4. The suitability of the model for teaching psychological courses in higher education received the highest possible rating ($Mean = 5.0$, $SD = 0.0$), while its effectiveness in addressing students' anxiety, depression and learning achievements was also rated highly ($Mean = 4.8$, $SD = 0.2$). The four instructional phases—before class, in-class activities, after class, and evaluation—were all evaluated at the "Strongly Agree" level, with in-class activities receiving the highest rating ($Mean = 5.0$, $SD = 0.0$). The VR equipment and online platforms were deemed user-friendly ($Mean = 4.8$, $SD = 0.2$) and activities were rated as engaging, motivational ($Mean = 4.8$, $SD = 0.2$) and aligned with learning objectives ($Mean = 4.6$, $SD = 0.4$). Furthermore, activities were unanimously recognised for providing timely and supportive interventions, aligning with the curriculum and being flexible and adaptable ($Mean = 5.0$, $SD = 0.0$). These findings demonstrate a strong consensus among experts regarding the model's effectiveness, usability and alignment with educational goals. The detailed result of experts' evaluation is shown in following Table 2.

Table 2. Result of Experts' Evaluation

Dimensions	Items	Mean score	SD	Level
Suitability	The VRFCR Model is suitable for teaching psychological courses in higher education institutions	5.0	0.0	Strongly Agree
	The VRFCR Model is suitable for helping students' anxiety, depression level and learning achievement in psychological courses	4.8	0.2	Strongly Agree
	The VR equipment and rain classroom-online learning platform are easy to use and suitable for college students	4.8	0.2	Strongly Agree
Components of Model	The following four phases of VRFCR Model are suitable	4.8	0.2	Strongly Agree
	Phase 1 before class	4.8	0.2	Strongly Agree
	Phase 2 in class	5.0	0.0	Strongly Agree
	Phase 3 after class	4.8	0.2	Strongly Agree
	Phase 4 evaluation	4.8	0.2	Strongly Agree
Learning activities	The activities engage and motivate the students	4.8	0.2	Strongly Agree
	The activities align with the learning objectives	4.6	0.4	Strongly Agree
	The activities provide timely and supportive interventions	5.0	0.0	Strongly Agree
	The activities align with the curriculum	5.0	0.0	Strongly Agree
	The activities are flexible and adaptable	5.0	0.0	Strongly Agree

4. Discussion

The research findings provided valuable insights into the current state of psychological education in higher education and demonstrated the urgent need for pedagogical innovations to meet Chinese college students' needs. These findings highlighted the necessity for adopting Virtual Reality (VR) technology and flipped classroom models to address critical gaps in student engagement and learning outcomes, especially in psychological education.

The participants were dissatisfied with current psychological textbooks due to students' strong agreement on uninteresting content and perceived lack of usefulness. This result aligned with existing studies highlighting the limitations of traditional learning materials. For instance, Groenewald et al. (2024) noted that static and text-heavy content often fails to engage digital-native students who thrive on interactive and visually rich learning experiences. Furthermore, the difficulty and unmanageability of textbook content echoed findings by Cevikbas & Kaiser (2023), who advocate for integrating multimedia tools to enhance comprehension of complex psychological concepts. This dissatisfaction strongly suggested a need to move beyond traditional materials toward more dynamic resources. VR technology offers a compelling alternative by providing immersive simulations that bring textbook theories to life. For example, VR-based experiential learning allows students to virtually explore scenarios such as patient interviews

or therapeutic techniques, fostering a deeper understanding of psychological issues like depression and anxiety (Zhong et al., 2024).

The data reveals that psychological courses are perceived as vital for managing mental health concerns and addressing depression and anxiety. These findings aligned with research by Wang et al. (2021), which emphasises the dual role of psychological education in promoting academic success and emotional well-being. However, the persistent mental health crisis among college students necessitates more targeted interventions. Flipped classrooms, where students engage with foundational materials outside of class and focus on active, application-based learning during sessions, can bridge this gap. According to Atwa et al. (2022), flipped learning improves emotional engagement by fostering collaboration and real-world problem-solving. In psychological education, this approach can be instrumental in equipping students with practical skills to manage their mental health effectively (Fructuoso et al., 2023). For example, class activities could include role-playing therapeutic techniques or analysing case studies of mental health conditions, thereby ensuring students internalise coping strategies for depression and anxiety.

Participants strongly preferred modern, flexible learning methods, with online and blended learning receiving high approval. Scenario-based experiential learning was even more highly rated, highlighting students' demand for practical applications. These preferences were consistent with recent research, such as the work of Pira et al. (2023), which demonstrated the efficacy of blended and experiential learning in enhancing student engagement and knowledge retention. Fitria (2023) also claimed that VR technology directly addresses this demand by enabling scenario-based learning in an immersive environment, for instance, VR can simulate psychological scenarios, such as diagnosing a patient's mental health condition, providing students with hands-on experience that mirrors real-world applications. Such simulations enhance understanding and build confidence in applying theoretical knowledge to practical contexts (Okoro et al., 2024).

The overwhelmingly positive responses in this study have illustrated that technological integration, particularly VR, has been perceived as one of the most potentially transformative tools in higher education. Existing studies, such as those by Raja & Priya (2021), highlighted VR's ability to create immersive, distraction-free learning environments that significantly improve focus and comprehension. Additionally, the strong endorsement of online learning tools and mobile devices underscored the need for a multi-modal approach to psychological education. These findings suggested that institutions should prioritise investing in VR infrastructure and training faculty to leverage these tools effectively. Moreover, integrating VR into flipped classroom models could maximise its benefits, allowing students to engage with VR simulations before class and participate in collaborative discussions or activities during in-person sessions (Okoro et al., 2024). This combination can create a highly interactive and engaging learning experience, addressing academic and emotional needs.

Finally, the findings demonstrated the critical role of psychological education in addressing mental health concerns. As highlighted by the mean scores for managing depression and anxiety, students expect courses to equip them with practical strategies for coping with these issues. This aligned with the recommendations of Lin et al. (2023), who argue that higher education institutions have a responsibility to prioritise mental health support through their curricula by adopting VR technology and flipped classrooms, psychological education can move beyond theoretical instruction to provide actionable tools for mental health management (Okoro et al., 2024). For example, VR programs that simulate mindfulness exercises or exposure therapy could help students practice coping strategies in a controlled environment. Similarly, flipped classroom discussions could focus on peer-sharing of experiences and strategies, fostering a supportive learning community (Lin et al., 2023).

5. Implications for Psychological Education

The research findings have demonstrated the need to integrate VR technology and the flipped classroom teaching model into psychological education in higher education. These have significant potential to reduce anxiety and depression among students while addressing the limitations of traditional teaching methods. To implement this effectively, the researcher made the following implications for future psychological education.

Integrating VR technology and the flipped classroom model into psychological education is essential for addressing the growing issues of anxiety and depression among students while enhancing the effectiveness of teaching methods. Educators must recognise that traditional approaches, such as text-heavy materials, often fail to engage students or meet their mental health needs. VR technology offers a powerful alternative by creating immersive and interactive learning experiences that bring psychological concepts to life. For instance, educators can develop VR scenarios that simulate patient interactions, therapeutic techniques, or mindfulness exercises, allowing students to practice and internalise coping strategies in a controlled, realistic environment. These simulations deepen understanding and build

students' confidence in applying their knowledge to real-world challenges.

The flipped classroom model complements VR by fostering active, application-based learning. Before attending class, educators can design courses where students explore foundational materials, such as VR modules or recorded lectures. In-class activities can then focus on collaborative problem-solving, role-playing therapeutic techniques, or analysing case studies of anxiety and depression. This approach ensures that classroom time is used effectively to help students connect theory with practice, enhancing their academic and emotional skills.

Educators should prioritise developing flexible and inclusive course structures to support the integration of VR and flipped classrooms. For example, VR modules can be completed asynchronously, ensuring accessibility for students with varying schedules. In-class discussions or peer-led activities should follow these modules to reinforce learning and provide opportunities for emotional support. Institutions must also invest in VR infrastructure and provide training for educators to effectively use this technology in their teaching. Collaborating with mental health professionals to design VR scenarios and flipped classroom activities will further enhance the curriculum's relevance and impact, address the gaps in traditional psychological education, and equip students with practical tools to manage anxiety and depression. This integrated approach empowers students to take control of their mental health while fostering a deeper, more engaging educational experience.

6. Conclusion

This study assessed the need for psychological health education in Chinese higher education. The research findings revealed a strong demand for innovative teaching methods, particularly integrating VR technology with the flipped classroom model. Students highlighted the need for these approaches to address their dissatisfaction with traditional methods and help manage anxiety and depression. Meanwhile, the researcher of this study has proposed a flipped classroom with VR technology learning model supported by experts' evaluation opinions. By adopting this model, the researcher will conduct an experimental study with two groups using the posttest design method to compare the control group with the traditional method and the intervention group with flipped classroom with VR technology learning model to evaluate further the effectiveness of improving learning achievement, reducing students' anxiety and depression of such learning model in comparison with the traditional method.

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