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Analysis of the influence of blended learning on personality education among undergraduates in wisdom education

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ABSTRACT

This paper investigates the influence of blended learning on the personality education aspect of wisdom education among undergraduates in Jinan, Shandong province, China. The rapid development of information technology brings many opportunities to education but also results in various challenges. The main purpose of this study is to establish a model for wisdom education. This study employs a pragmatic approach, with qualitative research serving as the dominant role and quantitative research as a support. Interviews were conducted with a sample of 23 lecturers and students, and a questionnaire was given to a larger, more representative sample of students (n = 423) using the blended learning mode. The results from the multiple data sources were then integrated to inform the development of a new conceptual model of personality education in the blended learning mode, which highlighted a significant correlation between personality education and the blended learning mode. The research findings were systematically organized in a coherent manner, ensuring that each of the research objectives was addressed impartially. Although it is recognized that the current study has certain limitations, the proposed model for the purpose of enhancing personality education in the context of wisdom education represents a significant milestone in the history of the field.

Contribution/Originality: Very few studies have been undertaken to conceptualize a framework for wisdom education. The proposed model in this study showcases the significance of incorporating temperament theory as a crucial factor in enhancing personality education, significantly contributing to the current body of literature, as this endeavor has not been previously undertaken.

1. INTRODUCTION

This study is concerned with certain factors of the online teaching of wisdom education. Cheating behavior among students and the difficulties encountered in online education have led to this research on students' temperaments and personalities. This paper investigated the Big Five personality traits (Tupes & Christal, 1958) in the blended learning mode (Garrison & Kanuka, 2004) and their impact on personality education. The main aim is to move toward a model for personality education using blended learning. This study involved sophomore students in their fifth semester in colleges and universities in Jinan city, Shandong Province. They come from all over the country, are aged 18 to 20, and have studied college English integrated with personality education for four semesters.

1.1. Problem Statement

First, there is a lack of personality education in universities and colleges. Ideally, university should be a place of personality education that directly teaches growth and the awakening of life, but it is in danger of becoming a vocational training camp. If possible, personality education in the 21st century should move from two points of "fact" and "value" to integration.

Second, there is a lack of comprehension of temperament theory. In the west, the temperament hypothesis encompasses four distinct organizational patterns of personality and is rooted in behavioral descriptions that have been documented for more than 2,500 years. Understanding the temperament patterns provides insight into our fundamental desires, values, and proclivity toward cultivating specific talents. According to Temperament and Development findings in 1977 by renowned experts in the field, temperament is subject to the effect of nine distinct features. These features contribute to the distinctive temperament of a student, which in turn impact students' manner, emotional responses, and reactions to novel circumstances (Rothbart & Sheese, 2007). In order to get insight into the individual characteristics of each student, it is imperative to carefully observe and assess their levels across all nine temperament qualities. This comprehensive evaluation will enable educators to discern and comprehend the unique styles exhibited by each student (Rothbart & Sheese, 2007). Mary Rothbart's questionnaires have demonstrated a significant correlation with personality traits, presenting novel opportunities for further investigation. In 2007, *Developing a model of adult temperament*, Rothbart's research findings indicated notable associations between the Big Five personality traits and temperament dimensions (see Table 1).

Table 1. General temperament constructs and associated scales for the big five.

General temperament constructs and associated scales for the big five	
Broad domains	Associated scales
Affiliativeness	Emotional empathy, empathic guilt, social closeness
Aggressive negative effects	Aggression control, frustration, social anger
Effortful control	Activation control, effortful attention, inhibitory control
Extraversion/Surgency	High intensity pleasure, positive effects, sociability
Non-aggressive negative effects	Discomfort, fear, sadness
Orienting sensitivity	Affective perceptual sensitivity, associative sensitivity, general perceptual sensitivity

Source: Evans and Rothbart (2007).

In China, the theory of temperament is a reflection of ancient Chinese ideologists and philosophers since the pre-Qin Dynasty on human moral reason, emotion and passion. Confucius was the first to introduce the theory into the evaluation of social ethics and the first to apply it to education. He regarded benevolence as the basis of human nature and the core content of social ethics and moral evaluation.

The ultimate goal of education is to cultivate healthy minds and interest, keep the "seven emotions" and "six desires" in line with the bottom of humanity, embody the heavenly principles in the lust of man, disclose human desires in natural justice, and endow people with benevolence, righteousness, honesty, loyalty and filial piety to be virtuous.

Confucians placed significant emphasis on the building of personal character, and they prioritize family, community, and the broader society (Zhu & Wei, 2018).

The Confucian perspective on learning and education places emphasis on individual temperament and holds considerable importance in current society.

1.2. Research Gaps

The inadequacy of personality education in current education has resulted in a practical gap in wisdom education. And due to the neglect of temperament theory in wisdom education, there is a theoretical gap. This study aims to fill these knowledge gaps.

1.3. Research Question, Hypotheses, and Objectives

RQ: What is the influence of the blended learning mode on students' personalities in wisdom education?

H1: The blended learning mode has a significant influence on students' temperaments in socialization.

H2: The blended learning mode has a significant influence on students' temperaments in perception.

H3: The blended learning mode has a significant influence on students' temperaments in self-control.

H4: The blended learning mode has a significant influence on students' personality education.

RO1: To examine the influence of the blended learning mode on students' temperaments and personality in wisdom education.

RO2: To develop holistic education focusing on wisdom education among undergraduates.

1.4. Theoretical Framework & Conceptual Framework

This study mainly utilizes the findings on blended learning by Bonk and Graham (2006) and Tupes and Christal (1958) to investigate the transformation of students' temperaments and personalities in the blended learning mode to promote personality education and realize real wisdom education.
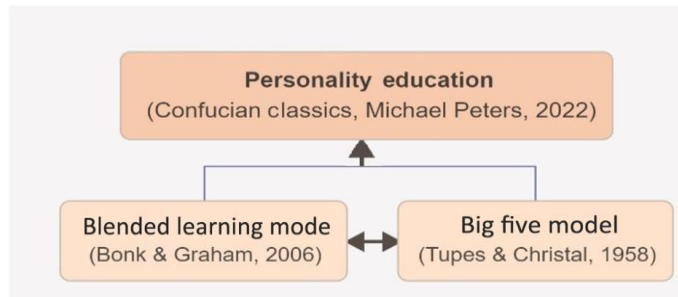

Figure 1. Theoretical framework.
Source: Peters (2022), Tupes and Christal (1958) and Bonk and Graham (2006).

Figure 1 illustrates the theoretical framework for the research, in which blended learning and the Big Five model are the independent variables, and personality education is the dependent variable.
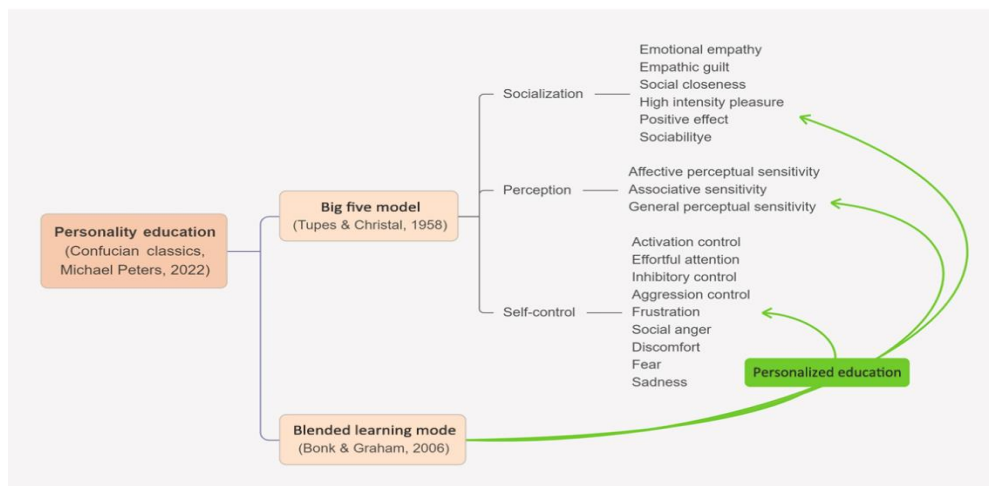

Figure 2. Proposed conceptual framework.
Source: Peters (2022), Tupes and Christal (1958), and Bonk and Graham (2006).

Figure 2 illustrates the conceptual framework for the research, which is used to examine the influence of blended learning on students' temperaments and personality transformation to verify the correlation between the variables.

2. LITERATURE REVIEW

2.1. The Blended Learning Mode

The Ministry of Education introduced the blended teaching approach as early as 2020. During that period, the Department of Teaching and Research initiated a push for the successful incorporation of contemporary information technology into university subject teaching reform. This entailed encouraging teachers to employ the most up-to-date information technology and methodologies in their practical teaching while integrating information-based approaches and resources with curriculum content. The aim was to effectively address and enhance the shortcomings and limitations of traditional teaching methods. There is a significant body of foreign academic research available on this particular mode of learning. This research encompasses various aspects, including the potential for reforming blended learning in higher education, empirical studies that incorporate flipped classroom approaches, and the publication of relevant systematic research monographs. The deterministic factors of online courses include the guarantee of an effective learning process, the provision of efficient educational content, and the establishment of a conducive educational atmosphere. In addition, it is vital to take into account the perspectives and requirements of the learners when developing online educational resources. In order to foster a successful learning process, it is imperative that teaching approaches demonstrate a profound regard for the wide range of learning variations among students. Designers of online courses must take into account cognitive styles, which are among several significant elements.

In 2006, the term "blended learning" became more concrete with the publication of the first *Handbook of Blended Learning* by Bonk and Graham (2006). Graham challenged the breadth and ambiguity of the term's definition and defined "blended learning systems" as systems that "combine face-to-face instruction with computer mediated instruction."

According to *An Effective Blended Online Teaching and Learning Strategy During the COVID-19 Pandemic*, implementing a blended online learning strategy is thought to be the most practical course of action because it successfully combines the advantages of both synchronous and asynchronous strategies. The main justification for choosing a mixed technique is to increase student involvement in their own learning process rather than having them merely listen to or watch a synchronous discussion.

The foundation of this methodology rests upon the cognitive load theory, which posits that individuals who are new to a subject are easily overwhelmed by a substantial influx of novel concepts and terminology, leading them to engage in surface-level learning (Darabi & Jin, 2013). The pedagogical technique known as the "flipped classroom" is characterized by active learning (Bergmann & Sams, 2012; Olakanmi & Gumbo, 2017) and involves the substitution of conventional lectures and homework with pre-class activities, including the utilization of concise, pre-recorded lecture films. The allocated class time is dedicated to enhancing the understanding of the subject matter through the utilization of problem-solving examples, interactive activities, and in-depth discussions (Rau, Jacobs, & Zernik, 1989). Nevertheless, the conventional in-person classroom setting has been substituted by synchronous online class sessions, sometimes referred to as "virtual classrooms," in order to effectively include students in activities and provide guided problem-solving dialogues within the context of the typical flipped classroom.

2.2. Personality Education

Personality can be defined as the cumulative manifestation of enduring psychological traits that are shaped through the dynamic interplay between individuals and their social environment. Personality education is an influential component of the education system that has a significant capacity to shape individuals. Personality education is centered around the cultivation of an individual's personality traits. Its objective is to foster the establishment of a well-rounded and refined personality, while also enhancing an individual's cognitive abilities, emotional intelligence, willpower, values, and behavior. The ultimate goal is to facilitate harmonious and advanced

development, enabling individuals to possess a strong sense of motivation and self-awareness. This, in turn, allows for the establishment of a sophisticated and effective self-regulation and control system. The implementation of personality education has the potential to facilitate individuals in optimizing their capabilities by assimilating the accomplishments of human culture, science, technology, intelligence, labor, and other civilizations into their distinctive attributes. This process enables the comprehensive development of personalities, fostering their ability to effectively integrate into society and contribute to its advancement.

According to the two levels of "sage" and "gentleman", Confucius designed a set of Confucian ideal personality standards with a core of cultivating people's moral subjectivity and called on people to realize the ideal personality of "sage inside and king outside" by means of "determination", "self-reflection", "practice" and "self-restraint". Confucianism believes that the embodiment of the highest personality is the sage. Sages should continue to improve their own cultivation to achieve self-discipline, benevolence and justice, and constantly improve their own good qualities so that they become the pillars of government and governance of the world, and ultimately achieve the organic combination and unity of benevolence and ritual. Confucius' thinking and practice on the ideal personality paradigm laid the tradition of Confucianism paying attention to personality education.

2.3. Big Five Personality Traits

The Big Five model was developed with the purpose of comprehending the correlation between personality traits and academic conduct. The definition was formulated by multiple distinct groups of scholars who conducted analyses on words pertaining to human behavior. Initially, the researchers conducted an investigation into the associations among an extensive array of phrases pertaining to personality qualities. They reduced the length of the word list by a factor of 5–10 and subsequently employed factor analysis to categorize the remaining features. The data primarily relied on individuals' estimations obtained through self-report surveys and peer ratings. This approach aimed to identify the fundamental factors underlying personality.

The basic model was proposed by Tupes and Christal (1958) however, it did not gain significant attention from scholars and scientists until the 1980s. In 1990, J.M. Digman proposed his five-factor model of personality, which was regarded afterward by Lewis Goldberg as being situated at the most comprehensive level of organization. The present study has identified five comprehensive domains that encompass the majority of established personality traits, and these domains are posited to reflect the fundamental structure underlying these qualities.

Multiple groups of scholars have independently conducted studies over several decades to examine the manifestation of personality traits in language. These studies have predominantly revealed a consistent set of five elements. The initial contributions in the field were made by Tupes and Christal (1958) succeeded by the Oregon Research Institute, Cattell at the University of Illinois, and ultimately Costa and McCrae. These four groups of researchers employed distinct methodologies in identifying five features, and each was assigned a different label and interpretation. Nevertheless, it has been observed that all of these variables exhibit a significant correlation with their respective factors. Research findings suggest that the predictive and explanatory value of the Big Five traits in relation to actual behavior is comparatively weaker when compared to the more abundant aspects or core qualities.

Each of the Big Five personality traits encompasses two distinct yet interconnected facets that represent a degree of personality that is more specific than the broad domains but more general than the numerous facet scales that also contribute to the Big Five framework. The five elements are categorized as follows: Neuroticism (includes volatility and withdrawal); Extraversion (includes enthusiasm and assertiveness); Openness (includes intellect, adventure, and imagination); Conscientiousness (includes industriousness and orderliness); and Agreeableness (includes compassion and politeness). Individuals who do not neatly align with a singular aspect within each aforementioned dimension are regarded as flexible, displaying a moderate and reasonable demeanor. However, they may also exhibit unprincipled tendencies, as well as an inscrutable and calculating nature.

Openness is a trait encompassing qualities such as imagination and insight. This personality feature is characterized by a strong inclination toward exploring and acquiring knowledge, as well as a keen interest in engaging with the world and interacting with others. This phenomenon results in the development of a diverse array of interests and a propensity for more daring decision making. The feature of openness is significantly influenced by creativity, which contributes to an expanded comfort zone in the realm of abstract and lateral thinking. Consider an individual who consistently selects the most unconventional items from a menu, frequents diverse locations, and exhibits hobbies that surpass one's expectations. Such an individual can be characterized as possessing a high degree of openness. Individuals who exhibit low levels of this feature are often associated with adopting conventional methods to life and may encounter difficulties when attempting to solve problems that are beyond their familiar realm of expertise.

Conscientiousness is a personality attribute characterized by elevated levels of thinking, effective impulse control, and purposeful behaviors aimed at achieving certain goals. The propensity for employing an orderly and methodical approach is frequently observed among those working in scientific and high-level financial sectors, where the ability to attend to details and maintain a structured mindset is essential. An individual who exhibits a high level of conscientiousness consistently engages in proactive planning and introspective analysis of their own actions to evaluate their impact on others. In the context of team development, it is common for project management teams and HR departments to include individuals who exhibit a high level of conscientiousness. This deliberate inclusion serves to maintain a harmonious equilibrium among the various structural functions within the team. An exemplary illustration of a conscientious individual can be observed in someone who consistently demonstrates proactive planning for future encounters while also maintaining regular communication to inquire about the welfare of others. Individuals with this trait exhibit a propensity for arranging their activities and interactions in accordance with specific dates and events, displaying a heightened level of attentiveness toward the interlocutor during face-to-face encounters. Individuals with low levels of conscientiousness often exhibit a disfavor toward structured environments and schedules, leading to a tendency to delay crucial duties and ultimately experience difficulties in job completion.

Extraversion, also known as extroversion, is a common personality attribute that individuals may have encountered in their personal experiences. The concept under consideration is readily discernible and enjoys broad recognition as a trait of individuals who derive vitality from social interactions. Extraverted individuals have gained widespread recognition in social interactions over the course of many years due to a variety of characteristics, including talkativeness, aggressiveness, and a high degree of emotional expressiveness. Many people have acquaintances or relatives who exhibit extrovert tendencies throughout social engagements and who have a proclivity for being the focal point of social interactions, derive satisfaction from engaging with unfamiliar others, and exhibit a tendency to maintain an extensive network of friends and acquaintances. Conversely, an individual who exhibits contrasting characteristics in our social circles is an introvert. These individuals exhibit a preference for isolation and experience diminished levels of energy in social settings. Being the center of attention or engaging in casual conversation can be mentally and emotionally draining. Extroverts often gravitate toward occupations that involve significant public interaction, such as sales, marketing, teaching, and politics. Extroverts are also more inclined to assume leadership roles rather than be passive in a group setting, as they are often perceived as individuals who actively engage and take charge.

Agreeable individuals demonstrate elevated levels of agreeableness and are likely to exhibit observable indications of trust, altruism, friendliness, and affection. Individuals with a high level of agreeableness have a propensity for engaging in prosocial acts, indicating their inclination to assist others. The characteristics of sharing, consoling, and cooperating are commonly associated with individuals who possess highly pleasant personality traits. Empathy for others is often perceived as a variant of agreeableness, despite the fact that this categorization may not be entirely accurate. Disagreeableness serves as the antithesis to agreeableness, exhibiting behavioral

patterns that are socially unpleasant. Instances of manipulation and malevolence toward others, a deficiency in empathy or compassion, and a lack of engagement or concern for others and their predicaments are frequently observed phenomena. Individuals who possess agreeable personality traits often gravitate toward professional pursuits that allow them to have a significant positive impact. Individuals who engage in charitable activity, provide medical assistance, support mental health initiatives, and volunteer in soup kitchens, as well as those who devote their time to the third sector (social studies), have a high level of agreeableness.

Neuroticism is typified by the presence of negative effects, including feelings of sorrow, moodiness, and emotional instability. Neuroticism, frequently misconstrued as indicative of anti-social conduct or perhaps a more severe psychological condition, is in fact a physiological and emotional reaction to stress and perceived threats encountered in an individual's everyday life. Individuals characterized by elevated degrees of neuroticism are prone to mood fluctuations, heightened anxiety, and increased irritability. People who exhibit abrupt fluctuations in their demeanor on a daily basis may have a pronounced disposition toward neuroticism, which manifests in their heightened responsiveness to elevated levels of stress in both their professional and personal lives. Anxiety is a significant component of neuroticism and pertains to an individual's capacity to manage stress and navigate perceived or actual risks. Individuals who exhibit neuroticism tend to engage in excessive rumination and experience challenges in achieving a state of relaxation, even within their personal environment. Naturally, individuals with lower rankings on the neuroticism scale will demonstrate a greater degree of mental stability and resilience when confronted with stress and various circumstances. Individuals with low levels of neuroticism exhibit few instances of sadness or depression. They demonstrate a tendency to direct their attention toward the present and refrain from engaging in cognitive processes that may induce stress. The reliability of assessments derived from the Big Five personality tests is contingent upon the presence of adequate study and substantiation. The current psychological model used for personality assessment is often regarded as the most rigorously verified and dependable. This tool is utilized for the purpose of predicting both behavior and personality traits. The aforementioned model has proven to be a reliable tool utilized by enterprises and scientific research endeavors for an extended duration. Its constant application has facilitated the development of novel models that effectively forecast individuals' workplace behavior, reactions to stress-inducing circumstances, and comprehension of many features within documented sociological studies.

For convenient analysis, the researcher set the general constructs and associated scales for the Big Five. Table 2 presents the correlating dimensions between temperament construct and personalities in the Big Five.

Table 2. General constructs and associated scales in the big five.

General temperament constructs and associated scales in the big five	
Broad domains	Associated scales
Socialization	Emotional empathy, empathic guilt, social closeness, high intensity pleasure, positive effects, sociability
Self-control	Aggression control, frustration, social anger, activation control, effortful attention, inhibitory control, discomfort, fear, sadness
Perception	Affective perceptual sensitivity, associative sensitivity, general perceptual sensitivity

3. METHODOLOGY

3.1. Research Design

According to Saunders, Thornhill, and Lewis (2009) it is crucial for researchers to have a strategy in place as it enables them to effectively address research questions and accomplish research objectives. The primary objective of this research is to examine the impact of an individual's temperament and the implementation of a blended learning model on wisdom education. To attain the research objective, this study has opted for a pragmatic approach, with qualitative research playing the dominant role and quantitative research as support. During the initial phase, extensive documented evidence was gathered pertaining to personality education, blended learning, and the Big

Five personality model. For the second phase of the study, semi-structured face-to-face interviews were employed as the chosen method to investigate the perspectives and viewpoints on blended learning in the context of personality education. In the third part of the study, a questionnaire was designed based on the insights gathered from the interviews. The purpose was to analyze a conceptual framework through interviews and questionnaires in order to gain insight into the many viewpoints of personality education.

3.2. Population and Samples

Some state that sample sizes of 20–30 are typically (pp.56) used by researchers to establish data saturation using a grounded theory approach to a qualitative inquiry (Creswell, 1998). For the semi-structured interviews, 13 teachers were selected randomly according to the necessary criteria. All of them have participated in college English teaching integrated with personality education for at least five years and have a good understanding of personality education and blended learning. The interviews were conducted in the form of discussion activities on teaching and research in the office, with the active participation of group members. Ten students were selected randomly according to the criteria to participate in the interview: four of them self-identified as extroverts, two as introverts, and four as extrovert/intuitives, or extroverted introverts.

For the questionnaire survey, 423 students were chosen from more than 700,000 college students in Jinan, in Shandong province according to the criterion that they have studied college English integrated with personality education for four semesters.

3.3. Instrument

A series of semi-structured interviews were conducted among a small sample of lecturers and students (n = 23) and a questionnaire with a larger, more representative sample of students using blended learning (n = 423).

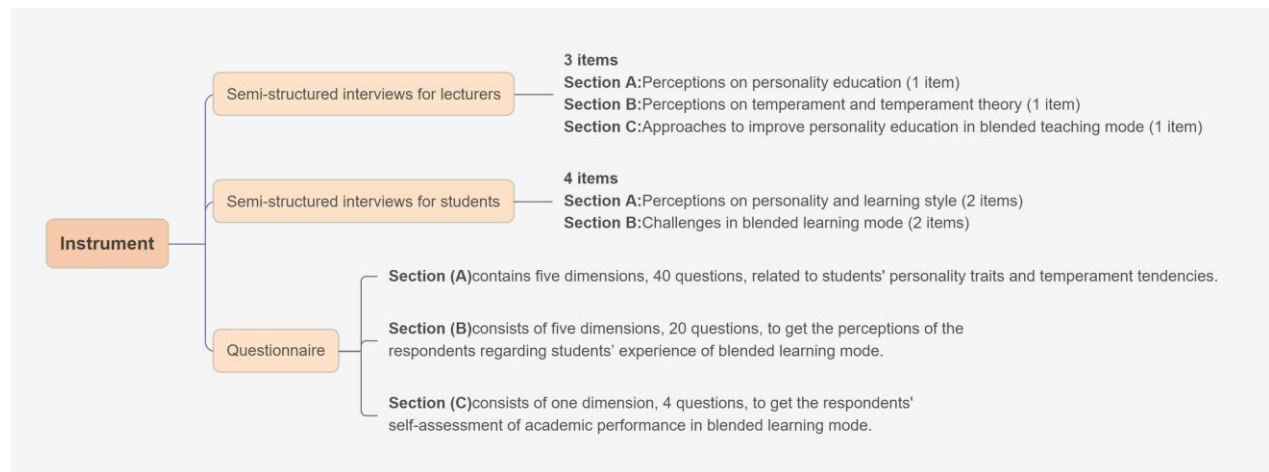Figure 3 illustrates the instruments employed in this research in detail.

Figure 3. Study instruments.

3.4. Qualitative Research

Interviews are commonly employed in research to obtain a comprehensive understanding of phenomena using small sample sizes. This may encompass a solitary case study carefully chosen through a rigorous vetting procedure to attain the research objective and address the research inquiries (Patton, 1990; Saunders, Lewis, & Thornhill, 2016). A total of ten interviews were carried out with the ten students who were chosen for the study. A degree of apprehension exists within the realm of qualitative research regarding the optimal number of interview respondents required to facilitate the generalizability of the findings. According to Kvale (1996) the determination of sample size should be based on the necessity to obtain the essential data. Consequently, it is advisable to conduct interviews

with an adequate number of individuals to fulfill this objective. In contrast, Miles and Michael (1994) asserted that the matter of sample size in qualitative research holds limited significance. They argued that the primary objective of qualitative research is to conduct a comprehensive analysis rather than findings that can be applied universally. The decision was made to utilize purposive sampling, a method commonly employed by qualitative researchers, as described by Ramsay and Silverman (2005). This approach is particularly suitable when seeking individuals or groups with extensive knowledge pertaining to the topic under investigation. In contrast, random sampling was employed for the questionnaire, with the objective of obtaining information that can be extrapolated to the entire population. According to Saunders et al. (2009) the utilization of purposive sampling facilitates the selection of informative examples that are recognized to contribute to the resolution of research issues and the attainment of research objectives. Guest, Bunce, and Johnson (2006) also discussed the importance of sample size range in order to achieve saturation. They suggested that a sample range of seven to 12 respondents is sufficient for this purpose. Additionally, they provided a description of a selected sample, which serves to decrease the necessary sample size to achieve saturation. Hence, it may be inferred that in order to obtain reliable qualitative data through interviews, researchers should prioritize the data collection and analysis procedures, rather than excessively concerning themselves with the size of the sample.

The decision was made to utilize a diverse sample for the interviews in order to ensure that the respondents being interviewed possess expertise and understanding in relation to the blended learning mode and personality education. Therefore, a total of 23 interviews were deemed to be enough for the purposes of this research based on the following three criteria:

1) Aware of the purpose of the research.

2) Proficient in the use of blended leaning.

3) Interested in personality education and blended learning.

The 13 teachers and the 10 students were asked to answer the following two questions:

Q1: Do you know about personality education? How would you define its concept and its role in our college education?

Q2: What challenges have you had with the blended teaching and learning mode? What measures have you adopted to deal with these challenges?

The interview was conducted in the form of discussion activities on teaching and research in the office, with the active participation of group members.

The 10 students who were purposely selected were asked to answer the following four questions:

Q1: Which learner personality in the questionnaire did you relate to most and why?

Q2: Which learning styles in the questionnaire did you relate to the most and why?

Q3: What is the most important factor in motivating you to engage in blended learning?

Q4: Based on your experience of both blended learning and traditional lessons, which do you prefer? Please elaborate on your answer.

3.5. For the Quantitative Research

For the questionnaire survey, 423 students who have completed four semesters of personality education through blended learning were chosen. Table 3 presents the profiles of the respondents.

Table 3. Profile of survey respondents from Jinan, Shandong province, China.

Respondents' experience with blended learning	Number	Percentage
5+ years	82	19.3%
3−5 years	169	39.9%
1−3 years	172	40.8%
Total	423	100%

3.6. Validity and Reliability Tests

Neuman (2006) emphasized the importance of piloting a questionnaire before its administration to mitigate potential issues or challenges that respondents may encounter when comprehending and responding to the questions. The act of pilot testing serves as evidence to support the validity of a questionnaire and the reliability of the data. As a result, the questionnaire utilized in this study underwent multiple pilot tests before its ultimate distribution, as outlined below.

During the initial phase, the questionnaire was developed by conducting a comprehensive examination of relevant literature and taking into account previous surveys that pertained to temperament and personality traits. The draft tool was thereafter subjected to a comprehensive discussion with the researcher's supervisors, whereupon it was refined based on recommendations pertaining to analogous inquiries. Subsequently, the questionnaire was deliberated on by a group of doctoral scholars, and based on the outcome, certain modifications were implemented, such as the elimination of certain elements to reduce the total length of the survey.

During the second phase, the revised version of the questionnaire was presented to a senior lecturer for content validation. The senior lecturer concurred with the assertion by Walsham (2005) that the questionnaire's quality and validity were sufficient to fulfill its intended purposes.

During the third phase, which took place in March 2023, 80 students were invited to participate in completing a questionnaire. The purpose of this exercise was to assess if they encountered any difficulties in effectively addressing the questions presented in the questionnaire. Consequently, a minimal number of items were modified to enhance their comprehensibility. These modifications resulted in the final version of the questionnaire.

It is crucial to refer to the existing literature pertaining to the subject matter of the proposed questionnaire to avoid redundancy and ensure that the questionnaire does not gather information that has already been extensively covered in the literature. This study aims to investigate the existing knowledge on the notion of temperament theory and wisdom education, as well as the implementation of personality education in a blended learning mode to facilitate the achievement of wisdom education. The questionnaire was ultimately designed to encompass distinct categories, each representing large areas of inquiry.

As previously stated, the initial section of the survey was specifically formulated to gather comprehensive demographic data pertaining to the sample population under investigation. Section A has a set of five dimensions with a total of 40 questions that pertain to the personality traits and temperament inclinations of the students. Section B comprises six categories with 24 questions and was specifically developed to gather respondents' opinions on students' experience and appraisal of blended learning, as well as to investigate the influence of temperament theory on wisdom education. Every eligible individual was personally invited by the researcher to participate in the study. The invitation encompassed a comprehensive explanation of the research objective as well as a meticulously designed survey questionnaire. Additionally, assurances of confidentiality were made to promote candid responses. The matter at hand is further elaborated upon in the subsequent section dedicated to ethical considerations.

3.7. Validity for Qualitative Research

First, two professors (one is the Director of the Teaching and Research department with rich teaching experience, the other is a senior education expert) validated the interview questions using the validation form given to them by the researcher.

Second, this study employed standard analytical procedures to analyze the qualitative data. Additionally, the draft transcripts of the interviews underwent a validation process, wherein the respondents reviewed and confirmed the accuracy of their statements. Furthermore, the researcher meticulously recorded the fieldwork, encompassing both the data collection phase and the subsequent analysis, in a manner that facilitates external scrutiny and verification of the methodologies employed and the resulting conclusions.

Last, according to the two professors, the interview questions for the lecturers gained an average score of 87, and the interview questions for students gained an average score of 93, indicating that the interview questions are valid and sufficient to collect the data and answer the qualitative research questions.

3.8. Validity of the Quantitative Research

In Section A, the researcher adopted the abbreviated version of China's Big Five Personality Questionnaire, which has been validated and widely used. In Section B, the researcher adopted Measuring Self-regulation in Online and Blended Learning Environments, which has been empirically tested and widely used.

The issue of construct validity in the mixed methods approach pertains to the extent to which the empirical data obtained from various contexts yield consistent findings, and whether the utilization of numerous sources of evidence enhances the quality of the data (Voss, Tsikriktsis, & Frohlich, 2002; Yin, 2009). Furthermore, Collis and Hussey (2009) provide an explanation of construct validity by highlighting the presence of unobservable phenomena, such as motivation, satisfaction, and ambition. These phenomena are constructs that can potentially elucidate observable phenomena. It is crucial to establish precise definitions, operationalizations, and measurements for these constructs to ensure accurate assessment. To enhance the construct validity of the study, a variety of data collection methods was employed, including interviews, questionnaires, and documentation, to ensure reliable measurement of the constructs of temperament propensity and personality education.

To enhance the construct validity of the qualitative research, meticulous attention was given to the formulation of the interview questions to assure their precise evaluation of the components being investigated. In addition, the practice of member checking was implemented throughout the interview process to ensure the credibility and validity of the qualitative study. The interview transcripts were distributed to the respondents to seek their input and criticism. The items were subjected to slight alterations before being returned. The objective of this procedure, as previously stated, is to guarantee the genuineness of the transcribed material.

3.9. Reliability Tests

The reliability of the questionnaire regarding temperament transformation was tested by Cronbach's alpha. This produced a value of 0.916, which is greater than 0.90. Cronbach's alpha for each part of the questionnaire was also higher than 0.80, indicating that the questionnaire is highly reliable and can be used in the real test.

Table 4. Reliability of the pilot test.

Scale: All variables		
Case processing summary		
	Number	**%**
Cases valid	80	1.000
Excluded[a]	0	0.0
Total	80	1.000
a. Listwise deletion based on all variables in the procedure.		
Reliability statistics		
Cronbach's alpha	No. of items	
0.916	64	

Table 4. Continued…

Variable	No. of items	Cronbach's alpha
Temperament transformation	64	0.916
Socialization	22	0.87
Perception	23	0.88
Self-control	19	0.93

4. FINDINGS

4.1. Findings From the Interviews

The following question was posed to the respondents: "Based on your experience of both blended learning and traditional lessons, which do you prefer? Please elaborate on your answer." Most of the respondents interviewed chose blended learning and explained their reasons.

Theme 1: The blended mode is more effective, flexible, and beneficial for the students.

I certainly prefer blended learning. With the integration of so many social media, we can share and compare knowledge to encourage and demonstrate the effective application of newly learned skills. (Respondent 1)

Their classmates bring a variety of information and experience to the table about the course topic. With blended learning, students can study online at their own pace rather than being constrained by the group's fastest or slowest learner. They can pause, rewind, and watch familiar content again, or they can skip ahead over it. (Respondent 4)

The flexibility of blended learning is why I favor it. Online self-paced video delivery would be the most appropriate medium for lone learners who prefer visual or written learning. Live instructor-led classes would be most beneficial for social and auditory learners. (Respondent 6)

Theme 2: Teachers' personality and charm in traditional classrooms is more important for students.

I prefer the traditional classroom setting. I think the role of an instructor in balancing the tasks and information provided is more important. (Respondent 7)

The teacher's personality and charm are very important to the students and affect the students' lives imperceptibly. If the teacher is very good, I would prefer a traditional classroom. (Respondent 8)

In response to the interview questions, the two introverted students claimed that they disliked attending school and preferred to learn alone in the blended learning mode. Most of them indicated that they preferred blended learning to traditional classroom learning because it allowed them to study whenever and wherever they chose. They also benefited from peer support.

Furthermore, the six extroverts with intuitive learning styles agreed that the incentive to learn was mostly driven by external influences. They also mentioned that peer support and the challenges associated with blended learning drive them. Furthermore, two of the extrovert students mentioned that they preferred a blended course with an instructor who could keep things interesting by assigning a variety of intriguing tasks. The intuitive learner, on the other hand, stated that he preferred traditional courses since he prefers to obtain all of his information from his instructor rather than from online sources. The remaining interviewees, two extroverts, claimed that they prefer the traditional classroom, despite the fact that blended learning has some benefits such as offering visuals, supplemental materials, and reducing classroom time. They emphasized the importance of an instructor in balancing the tasks and information provided on the blended learning platform.

Based on these findings, an instructor must consider learners' personalities and learning styles when planning or teaching a blended learning course, as these elements play a role in inspiring students to participate in a blended learning environment.

4.2. Findings from Questionnaire

The research population for this study consists of all students enrolled in the fourth semester in colleges and universities in Jinan, Shandong province. A random online sample of 423 students was selected. The data pertaining to the temperaments of students was gathered through the administration of questionnaires that utilized a 5-point Likert scale. Additionally, data on the implementation of blended learning was obtained through UCampus. The study employed linear multiple regression analysis to examine the association between the blended learning style and students' personalities.

Table 5 shows that 83.3% of the students think the blended mode is more effective, flexible, and beneficial, and 16.7% think that teachers' personality and charm is more important. Hence, blended learning is more favored, but teachers' personality and charm is also important in traditional classrooms. Below are some of the transcripts.

Table 5. Attitudes to blended learning from the interview respondents.

Attitude to the blended learning mode	(%)	Total
Blended learning is more effective, flexible, and beneficial	83.3%	10
Teachers' personality and charm is more important	16.7%	2
Total	100%	12

Table 6 shows that the socialization temperaments of the students is high, with a score of 3.7, which shows excellence in students' socialization in the blended learning mode. Affiliativeness has a score of 3.50, which means that 41.7% of the students were above average in agreeableness. Second, extraversion has a score of 3.70, which means that nearly 70% of the students could have high intensity pleasure, positive effects, and sociability in the blended learning mode. For the variable of personal communication, the result of the analysis can be seen in Table 7.

Table 6. Socialization temperaments in blended learning mode.

Temperaments in socialization	Category			Mean	Level
	Low (1.00–2.33)	Fair (2.34–3.66)	High (3.67–5.0)		
Affiliativeness	21 (5.0%)	225 (53.3%)	177 (41.7%)	3.50	Fair
Extraversion	92 (21.7%)	63 (15.0%)	268 (63.3%)	3.70	High
Average				3.7	High

Note:
- Affiliativeness: Emotional empathy, empathetic guilt, and social closeness.
- Extraversion/surgency: Sociability, high intensity pleasure, and positive effect.

Table 7. Perception temperaments in the blended learning mode.

Temperaments in perception	Level			Mean	Category
	Low (1.00–2.33)	Fair (2.34–3.66)	High (3.67–5.0)		
Affective perceptual sensitivity	113 (26.7%)	169 (40.0%)	141 (33.3%)	3.51	Fair
Associative sensitivity	92 (21.7%)	176 (41.7%)	155 (36.7%)	3.57	Fair
General Perceptual sensitivity	63 (15.0%)	225 (53.3%)	135 (31.7%)	3.57	Fair
Average				3.53	Fair

Note:
- Affective perceptual sensitivity: Awareness of the effect associated with low intensity stimuli.
- Associative sensitivity: Frequency and remoteness of automatic cognitive activity.
- General perceptual sensitivity: Awareness of slight, low intensity stimulation arising from the external or internal environment.

Table 7 above shows that the temperaments in perception are fair, with a score of 3.53. The first sub-variable, affective perceptual sensitivity, is 3.51, which means that 73.3% of the students' awareness of the effect associated with low intensity stimuli is at a fair or high level. The sub-variable of associative sensitivity is 3.57, which means that 41.7% of the students' frequency and remoteness of automatic cognitive activity is fair, and 36.7% is much better. The sub-variable of general perceptual sensitivity is 3.57, which shows that students' awareness of slight, low intensity stimulation arising from the external or internal environment is at a fair level.

Table 8. Self-control temperaments in the blended learning mode.

Self-control temperaments	Level			Mean	Category
	Low (1.00–2.33)	Fair (2.34–3.66)	High (3.67–5.0)		
Aggressive negative effect	212 (50.0%)	134 (31.7%)	77 (18.3%)	2.26	Low
Non-aggressive negative effect	77 (18.3%)	310 (73.3%)	36 (8.3%)	2.92	Fair
Effortful control	85 (20.0%)	190 (45.0%)	148 (35.0%)	3.11	Fair
Average				3.13	Fair

Note:
- Non-aggressive negative effect: Fear and sadness.
- Aggressive negative effect: Frustration and social anger.
- Effortful control: Activation and attentional control.

Table 8 shows that the category of self-control is at a fair level, with a score of 3.13, which means that students' performance in self-control is average. The sub-variable aggressive negative effect is at a low level of 2.26, which shows that half of the students couldn't handle their emotions concerned with frustration, social anger, and aggression. Only 18.3% of them could control their emotions well. Second, the sub-variable of non-aggressive negative effect is 2.92, which means that most of the students (73.3%) can handle discomfort, fear, and sadness normally, but only 8.3% of them can control them well. Last, the sub-variable of effortful control is 3.11, which means that 35% of the students did well in activation control, effortful attention and inhibitory control. The influence of blended learning on students' temperaments can be explained by using multiple linear regression tests, the results of which are shown in Table 9.

Table 9. Influence of blended learning on students' temperaments.

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	79.933	17.802		4.490	0.000
Socialization	0.054	0.126	0.559	0.432	0.017
Perception	0.001	0.074	0.402	0.412	0.019
Self-control	0.002	0.076	0.400	0.416	0.018

As Table 9 shows, the formulation of multiple linear regressions can be obtained as follows: $Y = 79.933 + 0.054 X_1 + 0.001 X_2 + 0.062 X_3$. We can accurately predict the relationship between the independent variable and the dependent variable with the following explanations:

1) With each one-point increase in the value of X (influence of blended learning mode), the value of Y_1 (temperaments in socialization) will increase by 0.054; therefore, H1 is accepted and confirms that the blended learning mode has a significant influence on students' temperaments in socialization.

2) With each one-point increase in the value of X (influence of blended learning mode), the value of Y_2 (temperaments in perception) will increase by 0.001, which means that H2 is accepted and confirms that the blended learning mode has a significant influence on students' temperaments in perception.

3) With each one-point increase in the value of X (influence of blended learning mode), the value of Y_3 (temperaments in self-control) will increase by 0.002, meaning that H3 is accepted, confirming that the blended learning mode has a significant influence on students' temperaments in self-control.

The three sub-variables of temperament all obtained positive results in the blended learning mode (see Table 10).

Model	Sum of squares	df	Mean square	F	Sig.
Regression	33.608	3	11.203		
Residual	1801.642	56	32.172	0.648	0.041[a]
Total	1835.250	59			

Note: a. Predictors: (Constant), socialization, perception, self-control.

From the ANOVA results in Table 10, the significance is 0.041, which means a significant linear regression and shows that the students' temperaments have a strong relationship with the influence of blended learning. The F value is 0.648, which means that the variable of blended learning has contributed 64.8% to the improvement of students' temperaments, while the remaining 35.2% is attributed to other variables not included in this study. Therefore, H4 is accepted, confirming that blended learning has a significant influence on students' personality education.

5. DISCUSSION

RO1: *To examine the influence of blended learning on students' temperament and personality in wisdom education.*

RO2: *To develop a holistic education focusing on wisdom education among undergraduates.*

The implementation of blended learning on the students who participated in the online questionnaire has strengthened students' temperaments in socialization, personal communication, and self-control. The transformation of students' temperaments verifies the positive influence that blended learning has on wisdom education.

The three sub-variables of temperament (socialization, perception and self-control) collectively consist of six dimensions, which are: non-aggressive negative effects (fear and sadness), aggressive negative effects (frustration and social anger), effortful control (activation and attentional control), extraversion/surgency (sociability, high-intensity pleasure, and positive effects), orienting sensitivity (general and affective perceptual sensitivity and associative sensitivity), and affiliativeness (emotional empathy and empathetic guilt).

The findings regarding the temperaments of socialization, affiliativeness and extraversion/surgency, indicate that a significant majority of students demonstrate a willingness to collaborate and exhibit strong commitment toward achieving collective goals within a group setting. These students display a desire to invest their time in studying together and actively contributing to fostering amicable relationships with their peers, thereby effectively addressing challenges collectively within the classroom, engaging in diverse perspectives and fostering mutual adaptability within the study group through blended learning.

Blended learning has the potential to significantly enhance students' socialization skills. The improvement of these skills is positively correlated with their performance in class discussions and communication. The objective of incorporating temperaments in socialization is to enhance students' social skills, fostering qualities such as cooperation, friendliness, adaptability, and respect for others' opinions. These skills are particularly valuable in promoting effective collaborative learning within student study groups, both within and outside the classroom, through the utilization of blended learning methods. One similarity in the context of social construction is that the acquisition of knowledge is facilitated through the active engagement, interaction, and participation of students, which can be broadly referred to as social learning interaction.

The implementation of blended learning allows students to engage in active participation by posing several questions within their respective groups. In the event that the exercise poses challenges, it is expected that each participant will engage in collaborative efforts to comprehend the underlying theory and the difficulties under examination. Blended learning facilitates the provision of possibilities for students to assume various roles in the learning process, enabling them to make valuable contributions to the group. According to Vygotsky (1978)

successful socialization involves active participation by students, which can have a positive impact on their temperaments through social interactions with their peers in the learning process.

With respect to the variable of perception, three temperaments can be identified: affective perceptual sensitivity, associative sensitivity, and general perceptual sensitivity. The research findings indicate that there is variability in students' perception abilities, as well as their willingness to engage in collaborative idea sharing and opinion exchange when presented with a problem. A subset of participants refrained from making comments during the group study, exhibiting a deficiency in expressing their viewpoints during the problem-solving process. The utilization of communication tools serves as a beneficial medium for students to engage in group discussions, both within the confines of the classroom and beyond. Students who possess strong perceptual abilities are more likely to excel in classroom practice, thereby enhancing their overall commitment to academic pursuits both within and outside the classroom. Active participation in interactive communication is a crucial factor in facilitating the educational process. By adopting this approach, students can enhance their level of engagement during group and individual study sessions. The incorporation of blended learning has the potential to enhance students' cognitive abilities through engaging in discussions and interactive questioning.

Finally, students' temperaments in self-control—non-aggressive negative effects (fear and sadness), aggressive negative effects (frustration and social anger), and effortful control (activation and attentional control)—are of great significance in supporting students to strengthen social competence in the new situation of losing temperament and emotional self-control by establishing cooperative learning in the classroom. In this way, all students have the same opportunity to get help from their friends in their study group. Students can establish good emotional stability in interactive communication, which will push them to interact better in the blended learning mode.

The development of effective emotional self-regulation has the potential to impact students' academic performance and alleviate their anxiety levels during active engagement in discussions and interactive question and answer sessions. The learning experience is influenced by emotional elements, namely satisfaction, self-control, and anxiety, which are significant characteristics of student involvement. Within the context of this investigation, certain students expressed their emotional contentment regarding their connection with the surroundings in relation to their academic achievements.

There is a negative correlation between emotional stability and anxiety levels, such that individuals with higher emotional stability tend to exhibit lower levels of anxiety, leading to enhanced performance outcomes. In contrast, a decrease in emotional stability has been observed to correlate with heightened levels of anxiety, leading pupils to exhibit greater reluctance in actively participating during classroom discussions. This circumstance clearly impedes the advancement of children's educational development and diminishes their academic achievement. The occurrence of this phenomenon can be attributed to emotional instability and anxiety experienced by students, and it has a significant correlation with decreased academic achievement.

6. CONCLUSION

The study utilized a combination of research methods to gather qualitative data through semi-structured interviews with open-ended questions, as well as quantitative data through structured questionnaires with closed-ended questions.

Based on the results of the analysis, blended learning can improve the students' temperaments in socialization. Active engagement in interactive communication in blended learning plays an important role in the teaching and learning process. The blended learning mode could strengthen the students' temperaments in perception ability through each discussion and interactive question. Finally, students' temperaments in self-control could be optimized in the blended learning mode. Students can establish good emotional stability in interactive communication, which will push them to interact better in the blended learning mode. To sum up, any improvement in students'

temperament will bring about the promotion of wisdom education. In this process, blended leaning plays a crucial role in personality education.

The primary objective of this study was to examine the impact of blended learning on students' personality in wisdom education, with the aim of proposing a comprehensive model for effective wisdom education. In this study, the research findings have been amalgamated in a coherent and systematic manner, ensuring the impartiality of the analysis.

7. IMPLICATIONS, LIMITATIONS & RECOMMENDATIONS

This study emphasized that a strong correlation exists between temperament theory personality education and blended learning. The researcher elucidated potential rationales for these findings and endeavored to attain novel comprehension and offer original perspectives on the issue through a rigorous analysis of the results. This study provides a substantial contribution to the existing body of information in various aspects as an early attempt to research personality education and its implications for wisdom education and proposes a framework for the implementation of wisdom education.

A potential next step in this research involves conducting a cross-sectional questionnaire survey using a substantial random sample of college students to assess the validity and reliability of the newly proposed conceptual model for wisdom education. This would serve as an empirical contribution to personality education by providing an effective measurement tool for the evaluation, selection, and advancement of wisdom education. This would be considered as a sort of formative research. In order to validate the model, it is vital to employ an experimental intervention strategy. This entails evaluating students' temperaments and performance across all the essential qualities described in this study as initial measurements. The respondents would then be randomly assigned to either the intervention group, which would get training and mentoring in the development of personality education, or the control group, which would not receive any instruction. Subsequently, both cohorts can be evaluated after a period of one to two years to ascertain whether the implementation of personality education substantially impacts the improvement of objective wisdom education outcomes in comparison to the control group. To enhance the generalizability of the model pertaining to personality education and its influence on wisdom education, it is advisable to replicate the study in several nations.

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APPENDICES

Part A. Students' personality traits and temperament tendency.

No.	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
*Measuring students' temperament inclinations and personality traits						
1	I often feel very scared.	1	2	3	4	5
2	Once I set my goal, I will work hard to achieve it.	1	2	3	4	5
3	I think most people are basically well-meaning.	1	2	3	4	5
4	My mind is always full of vivid pictures.	1	2	3	4	5
*5	I'm bored with crowded parties.	1	2	3	4	5
6	Sometimes I feel good for	1	2	3	4	5

No.	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	nothing.					
7	I often make decisions after careful consideration.	1	2	3	4	5
*8	I don't care too much if other people are treated unfairly.	1	2	3	4	5
9	I'm an adventurous and unconventional person.	1	2	3	4	5
10	At busy parties, I often take the initiative and have fun.	1	2	3	4	5
11	A careless remark made by others is often associated with me.	1	2	3	4	5
12	I'm considered a measured person.	1	2	3	4	5
*13	I often feel that other people's suffering is irrelevant to me.	1	2	3	4	5
14	I'm very adventurous.	1	2	3	4	5
*15	I try to avoid crowded parties and noisy environments.	1	2	3	4	5
16	When I face pressure, I feel like I'm breaking down.	1	2	3	4	5
17	I like to plan things out from the beginning.	1	2	3	4	5
*18	I'm the kind of person who only takes care of himself, not others.	1	2	3	4	5
19	I have a strong curiosity about many things.	1	2	3	4	5
20	There's usually no awkward silence when I'm around	1	2	3	4	5
21	I often worry about things that don't matter.	1	2	3	4	5
22	I work or study hard.	1	2	3	4	5
23	There are some cheaters in society, but I think most people can be trusted.	1	2	3	4	5
24	I have a spirit of adventure that others don't have.	1	2	3	4	5
25	I want to be in a leadership position in a group.	1	2	3	4	5
26	I often feel unsettled inside.	1	2	3	4	5
27	I'm a person who gives everything I've got.	1	2	3	4	5
28	I often feel sad when others tell me their misfortunes.	1	2	3	4	5
29	I am eager to learn something new, even if it has nothing to do with my daily life.	1	2	3	4	5
30	I am often considered a warm and friendly person.	1	2	3	4	5
31	I used to worry that something bad was going to happen.	1	2	3	4	5
*32	At work, I often just try to get by.	1	2	3	4	5
33	Although there are some dark things in human society (Such as war, crime and fraud), I still believe that human nature is generally good.	1	2	3	4	5
34	I have quite a vivid imagination.	1	2	3	4	5
35	I like to go to social gatherings and entertaining parties.	1	2	3	4	5
*36	I rarely feel blue or depressed.	1	2	3	4	5

No.	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
37	Being logical and organized is one of my characteristics.	1	2	3	4	5
38	I often feel sorry for those who suffer misfortune.	1	2	3	4	5
39	I am open and receptive to new things, thoughts and ideas	1	2	3	4	5
40	I want to lead, not be led.	1	2	3	4	5

Part B. Self-regulation in online and blended learning environments.

No.	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	I set learning standards for my online learning tasks.	1	2	3	4	5
2	I set short-term (Daily or weekly) and long-term (Monthly or semester) learning goals.	1	2	3	4	5
3	I maintain a high standard (Quality) of online learning.	1	2	3	4	5
4	I set goals to help me manage my online study time.	1	2	3	4	5
5	I will not reduce the quality of my study because it is online.	1	2	3	4	5
6	In order to avoid distracting myself too much, I choose the place where I need to study.	1	2	3	4	5
7	I find a comfortable place to study.	1	2	3	4	5
8	I know where I can do the most effective online learning.	1	2	3	4	5
9	I choose a time with little (Or no) distraction for online study.	1	2	3	4	5
10	I try to take more complete notes when I study online because notes are more important in online study than in traditional study.	1	2	3	4	5
11	I will read the online learning materials aloud to avoid distraction.	1	2	3	4	5
12	I prepare my questions before entering a forum or chat room for discussion and communication.	1	2	3	4	5
13	In online learning, I will complete some non-specified additional content to master the course.	1	2	3	4	5
14	I know it takes time to study online, so I allocate more time to study online.	1	2	3	4	5
15	I try to plan my study time each day (Or week) and follow that plan for online study.	1	2	3	4	5
16	Although I have to attend classes every day, I try to distribute my study time evenly.	1	2	3	4	5
17	When I need help, I will consult students who are more knowledgeable about the course.	1	2	3	4	5
18	I share my problems with online classmates so that I can know if we can work together to solve them.	1	2	3	4	5
19	If necessary, I try to have face-to-face communication with my classmates.	1	2	3	4	5
20	I insist on getting help from my teachers by e-mail.	1	2	3	4	5

Part C. Students assessment of academic performance in blended learning mode.

No.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	I summarize online learning to test my understanding of what I've learned.	1	2	3	4	5
2	When doing online learning, I ask myself a lot of questions about the course material.	1	2	3	4	5
3	Through communication with my classmates, I found out how I performed in online learning.	1	2	3	4	5
4	I learn the difference between what I am learning online and what my classmates are learning by communicating with them.	1	2	3	4	5

Part D. Personal background.

1. Gender: ☐ Male   ☐ Female

2. Age: ☐ 17   ☐ 18   ☐ 19   ☐ 20

3. How long have you studied in blended mode?
    ☐ 1–3 years   ☐ 3–5 years   ☐ more than 5 years