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Reframing Online Classroom Management: Toward Enhanced Undergraduate Teaching and Learning

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Abstract. Technological advances have made virtual classroom teaching a reality. Although research into online classroom management is critical, current research in this area, particularly in higher education classroom management, is insufficient. The study determined which online classroom management strategies teachers believe are most beneficial to students at various levels of academic performance. A questionnaire based on the online classroom management mode framework was used to collect data from 74 teachers and 491 undergraduate students. A Chi-square test revealed that the preferences of teachers and students for online classroom management behaviours were statistically significant ($p<0.05$). Analysis of variance revealed that teachers of various teaching ages have the same views on online classroom management modes, and undergraduates with varying GPAs have the same preference for the online classroom management mode. Online classroom managers of all teaching ages believe that a slightly interventionist style of interaction benefits students' academic performance the most. Undergraduates, on the other hand, prefer the interactive online classroom management mode, regardless of academic level. Students prefer teachers who offer more interaction, communication, collaborative decision-making and motivation when learning online. The findings further suggest that, while the online environment is unique, the effective classroom management strategies in the online environment are the same as those considered effective in the face-to-face classroom. It should be noted that classroom management strategies encompass a multitude of factors. Therefore, relying solely on the dimensions of personality, teaching, and discipline may not provide a comprehensive assessment of the overall effectiveness of online classroom management. Further research should focus on refining and expanding the evaluation framework for online classroom management modes to address these limitations, and enhance the understanding of this field.

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1. Introduction

The primary objective of education is to empower students to recognise their own worth, establish personal life ideals, and acquire the essential knowledge and skills necessary to pursue their dreams. The classroom serves as the main platform for achieving these goals, and teachers play a pivotal role as the primary managers in this educational process (Keshavarz et al., 2022).

The advent of information and communication technologies has brought about remarkable and revolutionary challenges to the traditional concept and practice of education (Suartama et al., 2019). Technological advances have made virtual classroom teaching a reality, with online learning gaining widespread recognition for its practicality and convenience, rivalling that of traditional face-to-face learning. After several years of implementation, online learning now stands alongside traditional learning methods. In fact, online teaching has become a long-term phenomenon, with its application scenarios expanding rapidly. Stone (2019) emphasised the rapid growth of online learning, which is reshaping higher education as an increasing number of universities worldwide offer degree programmes through online distance learning.

Traditional education, which revolves around teachers and content, often falls short in fully engaging students' critical and creative thinking. Online education, on the other hand, provides more opportunities to address such limitations (Slisko, 2021). Additionally, online education contributes to promoting educational equity by providing better access to educational resources for disadvantaged groups who face barriers in traditional education settings. However, managing the complexities and diverse events that occur within online classrooms poses significant challenges for classroom management (Wolff et al., 2021). The online learning environment further complicates classroom management as it becomes difficult to keep students focused and engaged in respectful interactions, whether teaching is conducted entirely online or incorporates online elements into in-person instruction.

While online learning offers numerous advantages and gains momentum, it does not imply that online classroom management can be neglected. On the contrary, online classrooms require scientific and effective management. Teachers encounter various challenges in online classes, such as students' reluctance to enable cameras or use voice features in virtual classrooms, as well as difficulties organising class activities. Fortunately, the online teaching classroom management mode can provide theoretical insights and practical strategies tailored to the online teaching environment. Therefore, it is crucial to ascertain the effectiveness of the online teaching classroom management mode as it serves as a key factor in enhancing the outcomes of online teaching.

This study focuses on the following research questions:
RQ1: What are the preferences of teachers and students in terms of classroom management modes?
RQ2. Is there a significant difference in the classroom management preferences between teachers and students?
RQ3. Is there a significant difference in the classroom management preferences of teachers based on their years of service?
RQ4. Is there a significant difference in the classroom management preferences of students based on their academic levels?
RQ5. Is there a significant relationship between the academic performance of the students and their classroom management preferences?

2. Literature Review

2.1. Classroom management

There is consensus regarding the definition and importance of classroom management. Classroom management refers to the practices and procedures implemented by teachers to establish a environment conducive for instruction and learning (States et al., 2017). Scholars such as Tirmizi et al. (2022) and Alasmari and Althaqafi (2021) underscore its role in effective teaching. Therefore, teachers should strive to find optimal ways to manage their classrooms and create an ideal environment for high-quality learning (Ayebo & Assuah, 2017). Velásquez et al. (2022) succinctly summarise classroom management as a series of actions taken by teachers to cultivate a classroom atmosphere that fosters students' academic and socio-emotional competencies. It has been observed that teachers with a strong sense of responsibility are more inclined to support adaptive or beneficial classroom management styles (Berger & Girardet, 2021). The academic performance of students is closely related to the level of classroom management exhibited by teachers, as classroom management strategies are a vital factor influencing teaching effectiveness. Skilful classroom management is recognised as one of the essential qualities of effective teaching, requiring all teachers to identify the most effective approaches to foster the appropriate atmosphere for high-quality learning (Ayebo & Assuah, 2017). In fact, Marquez et al. (2020) assert that effective classroom management is a significant predictor of student success.

2.2. Online classroom environment

Müller & Mildenberger (2021) conducted a study to examine the impact of replacing classroom time with an online learning environment. The results showed that online learning is as effective as traditional classroom learning, even with reduced learning time, leading to almost equivalent learning outcomes. Bygstad et al. (2022) emphasised the transformative potential of the digital learning space in higher education, allowing universities to transcend physical and institutional boundaries and engage with the broader society. This emergence of the digital learning space is a crucial aspect of the ongoing digital transformation in higher education. However, Wut and Xu (2021) identified a potential drawback of online learning, which is the possible lack of cognitive and affective social presence. Lathifah et al. (2020) argue that effective management of online courses is essential, just as in face-to-face courses and Ghateolbahra and

Samimi (2021) recommend that professional development in online education, particularly in the area of classroom management, should include practical strategies, effective communication with students, and the implementation of an efficient classroom management programme to facilitate asynchronous discussions and online teamwork. Taghizadeh and Amirkhani (2022), and Albayrak and Ateskan (2022) conducted an extensive analysis of the literature on classroom management over a ten-year period and highlighted the urgent need for further research in education, particularly in higher education. They observed that existing research primarily focuses on teachers and students in primary and secondary schools, with limited attention given to teachers and students in undergraduate colleges (Valente et al., 2019).

2.3. Classroom management and students' academic performance

There is a scarcity of studies investigating the recognition of online classroom management models of students of different academic achievement levels, whereas extensive research has been conducted on the impact of management methods in traditional classrooms on students' academic performance (Korpershoek et al., 2016; Hidalgo-Cabrillana & Lopez-Mayan, 2018). For instance, Safiullah and Asma (2023) established a positive correlation between the Teaching Learning Process and student achievement and Jamba and Norbu (2023) found that the incorporation of classroom management techniques as a supplement to traditional teaching methods resulted in a statistically significant increase in mean test scores. Philemon (2016) discovered that a favourable classroom environment cultivates critical thinking, problem-solving skills, punctuality, self-discipline, leadership skills, confidence, and honesty among students. Gage et al. (2018) identified a significant decrease in student engagement during instruction in classrooms with low rates of classroom management practices.

3. Theoretical and Conceptual Framework

Although face-to-face teaching and online teaching differ in their instructional formats, they share many similarities in terms of factors that impact teaching effectiveness. To develop an evaluation framework for online classroom management, the researchers considered the concept of a "three-dimensional structure" of classroom management and expanded the "three modes" of classroom management into five modes. Martin and Baldwin (1993), as cited in Djigic and Stojiljkovic (2011), propose that classroom management is composed of three dimensions: personality, instruction, and discipline. The personality dimension involves teachers' perception of students as individuals and their efforts to foster students' personal development. The instruction dimension pertains to teachers' management of space, time, learning, and materials to facilitate student learning. The discipline dimension focuses on the establishment of a code of conduct for students in the classroom.

Wolfgang and Glickman (1980), discuss three major schools of thought on student management: Non-interventionist, Interventionist, and Interactionalist. Non-interventionism posits that students have an inherent drive for self-actualisation, and teachers need to exert only minimal control. Interventionism argues that

students require external environmental stimuli for their development, and teachers can exert influence through rewards and punishments. Interactionism falls in between, suggesting that individuals influence the external environment while being shaped by it.

Recent research further highlights several factors that should not be overlooked when considering online classroom management. These factors include: (a) Classroom interaction: The rapid global adoption of online education poses challenges for teachers in building meaningful relationships with online students compared to face-to-face settings. Interactive sessions are crucial to maintain student engagement (Martin, 2019); (b) Preventive management: Addressing issues, such as the needs of non-traditional students and the sense of isolation that may be exacerbated in the online environment; appropriate preventive management strategies can create a rich and productive online learning environment (Stewart, 2008); (c) Empathy: Empathy plays a key role in positively influencing student satisfaction and well-being (Munoz et al., 2022); (d) Emotional intelligence: Teachers' emotional intelligence affects classroom discipline management, with better emotional processing ability leading to improved management (Valente et al., 2019); (e) Positive psychology: Psychology and neuroscience indicate that positive psychology significantly impacts cognitive processes (Bernal et al., 2019); (f) Proximity: The proximity between teachers and students affects student focus. While teachers cannot control classroom layout in online teaching, they can take actions to influence students' perception of proximity (Dyer et al., 2018). These factors contribute to the comprehensive understanding of online classroom management and highlight the importance of addressing various aspects to promote effective online teaching and learning.

4. Methodology

4.1. Study Design

The study employed a cross-sectional research design to examine teachers' and students' preferred classroom management mode at a single point in time. It specifically investigated which online classroom management mode is more conducive to undergraduate students' academic performance from the perspective of teachers, and which online classroom management mode is more popular with students from the perspective of students. The study design also allowed the researchers to examine classroom management preferences based on students' academic performance and teachers' years of service.

4.2. Study population

Teachers who have taken online classes are the first population, and undergraduates who have participated in online classes are the second population. Seventy-nine (79) teachers and 536 students from four undergraduate colleges were asked to complete the questionnaire within a week through social media. Only 74 (93.7%) teachers and 491 (91.6%) student volunteers completed the survey. Each teacher and student volunteer was considered a separate, discrete entity, with no particular preference or weighting based on grade points, grade, gender, or job title. The researchers acknowledged that the sample size of collected questionnaires from teachers was not sufficiently large, which may have

influenced the accuracy and generalisability of the inferred results regarding teachers' perspectives.

4.3. Data gathering instruments

Martin and Baldwin (1993) and Djigic and Stojiljkovic (2014) developed the Inventory of Classroom Management Style and the Inventory for Teachers' Self-assessment in Classroom Management Styles, respectively. However, both are traditional face-to-face classroom management tools which are not fully suitable for online classroom management assessment. In addition, the study's respondents were Generation Z students who grew up against the background of the information revolution and who have a more independent consciousness and distinctive personality. They have a strong ability and willingness to accept and adapt to new things, such as online learning. Generation Z is also known as post-millennials, iGeneration, and digital natives. The Pew Research Centre defines this age group as anyone born after 1997. The present is timely and necessary to construct an applicable online classroom management assessment tool for this generation.

The online classroom management mode framework (Appendix 1) is constructed from three dimensions: personality, instruction, and discipline. Three experts (a young university lecturer who has been teaching online for many years, and two senior university professors in the field of education) evaluated the preliminary proposed questions and carefully evaluated whether the framework properly described the management behaviour of teachers in online classrooms. After adjusting and modifying some of the questions, the researchers determined the specific measurement plans for 17 sub-items of 7 items related to personality, instruction, and discipline modes.

The questions on the relationship between online classroom management strategies and academic performance (Appendix 2) are designed according to the framework of the online classroom management mode (Appendix 1), and the newer results of online classroom research mentioned in the theoretical framework. Each of the 17 sub-items in Appendix 1 is represented by one or more questions to assess the relationship between online classroom management modes and academic performance. The options for these items use a Likert-like scale. The options of the items in the Likert scale are often used to express the degree of progressive relationship in a single mode. Although the item options of this questionnaire also adopt a five-point format, they express the progressive relationship of intervention degrees under basic management modes; the mode options 1, 2, 3, 4, and 5, represent the five online classroom management modes: non-interventionism, semi-non-interventionism and semi-interactionism, interactionism, semi-interactionism and semi-interventionism, and interventionism, respectively.

Examples of items:

Item No.6 (dimension: Personality)

What do you think teachers should do when they say the wrong thing in an online classroom?

A. It doesn't matter, there is no need to deal with it

B. Explain it euphemistically

C. Apologise sincerely and get forgiveness from students
D. Find excuses to cover up the mistake
E. Refuse to admit the mistake

Item No.15 (dimension: Instruction)
What do you think teachers should do about the timing of online interactions in the classroom?
A. The duration is entirely up to the student
B. Allow students to do as much as they want with proper attention to time
C. Refer to students' opinions to plan activity time
D. Try to do it within the time period planned by the teacher, and only fine-tune it when it is necessary
E. Strictly carry out [interactions] within the time period planned by the teacher in advance

Item No.24 (dimension: Discipline)
What do you think a teacher should do if a student makes a noise or chats loudly with others in an online classroom?
A. Don't worry about it, ignore it
B. Ignore it for the time being, and remind the student tactfully after class
C. Change teaching methods in time to attract students' attention
D. Pause the lecture until the noise subsides before continuing
E. Interrupt the lecture and emphasise classroom discipline

To assess the internal consistency of the relationship questionnaire, the reliability of three dimensions of personality, guidance, and discipline was measured. As can be seen from Appendix 3, the Cronbach alpha coefficients are basically greater than 0.8, which indicate that the reliability of each variable in the questionnaire is very good. To assess the validity of this tool, the accuracy of the study was measured. Appendix 3 also shows that the KMO coefficient value and the results of the Bartlett sphericity test are satisfactory, which indicate that the items designed in the questionnaire have a high validity.

4.4. Data gathering procedures

After obtaining agency authorisation, a link to the questionnaire was sent to all participants via the social networking platform in the summer of 2022. The online survey tool was configured with informed consent, demographic information and questions involving management strategies. Except for demographic information, the questionnaires administered to teachers and students were identical (Appendix 2), with a total of 28 closed questions. Finally, a volunteer statistics teacher with 16 years of teaching experience implemented three different management modes (one of which was used as the baseline mode) for three online classes he taught (65, 63, and 64 students in each class). At the end of the semester, a comparative evaluation of students' learning effects was performed. The data for the teaching management effect evaluation were collected in the fall of 2022.

4.5. Treatment of Data

SPSS was used to statistically analyse the survey data. In the first step, the relevant items was synthesised into dimension variables using the function of calculating

variables. Descriptive analysis was used to determine which online classroom management mode teachers prefer and which management mode students prefer. The chi-square test was then used to determine whether the management modes preferred by teachers are consistent with those preferred by students. Following that, ANOVA was used to determine whether students' academic levels or years of teaching experience influenced preferences for an online classroom management mode. Finally, the ANOVA method and the mean plot chart were used to compare and analyse which management mode had the greatest impact on student learning.

5. Findings

5.1. Classroom management preferences of teachers and students

Table 1 displays the preferences of students regarding online teaching management modes, along with the recognised online teaching management modes by various teachers that are advantageous for students. It is evident that the mean values of the three dimensions of online teaching management modes that positively impact student performance, as perceived by teachers with different levels of teaching experience, are approximately 3.5. As previously mentioned, options 3 and 4 of the management mode represent two types of online classroom management modes, namely interactionism and a mode that lies between interactionism and interventionism. Hence, the mode value of 3.5 provided by teachers indicates an interactionist mode with some interventionist characteristics. Additionally, Table 1 illustrates that the mean values of the three dimensions of classroom management modes preferred by undergraduates with varying GPAs are approximately 3.0. This indicates that the mode of classroom management most preferred by undergraduates is the typical interactionist mode.

Table 1: Descriptive Analysis for Management Modes Preference

Participant	Dimension	N	Minimum	Maximum	Mean	Std. Deviation	Median
Teachers	Personality	74	2.50	4.63	3.5203	.43843	3.5000
	Instruction	74	2.33	4.27	3.4752	.38019	3.5000
	Discipline	74	2.50	4.38	3.5116	.43545	3.5250
Students	Personality	491	1.13	4.88	2.9653	.41360	2.9700
	Instruction	491	1.42	5.00	3.1107	.40801	3.0933
	Discipline	491	1.00	5.00	3.0514	.40917	3.0144

5.2. Difference in classroom management preferences between teachers and students

The distribution of online classroom management behavioural preferences for teachers and students, along with the chi-square test results, is presented in Table 2. It is noticeable that students had the highest number of responses in each preference category. However, this discrepancy is primarily due to the larger number of students in the study, with 13,748 records for 491 students compared to only 2,072 records for 74 teachers. The difference between teachers' and students' preferences for online classroom management behaviours was found to be statistically significant, $\chi^2(4, N = 15820) = 503.9046$, $p<0.05$.

Table 2: Contingency Table for Management Modes Preference

Participant	*Modes*					Total	χ^2	P
	1	2	3	4	5			
Teachers	7	283	723	786	273	2072		
	2.59%	7.80%	10.22%	22.92%	19.18%	13.1%		
Students	263	3344	6348	2643	1150	13748	503.91	.000
	97.41%	92.20%	89.78%	77.08%	80.82%	86.9%		
Total	270	3627	7071	3429	1423	15820		
	100%	100%	100%	100%	100%	100%		

Note. Mode values 1 to 5 represent the five modes of online classroom management. Specifically, 1 represents non-interventionism, 2 represents semi-non-interventionism and semi-interactionism, 3 represents interactionism, 4 represents semi-interactionism and semi-interventionism, and 5 represents interventionism.

5.3. Difference in classroom management preferences of teachers

To investigate whether teachers with varying years of experience held consistent views on the online teaching management mode that are more beneficial to students' academic performance, an analysis of variance was conducted. Table 3 indicates that for the three dimensions of personality, instruction, and discipline, the significance levels of the tests on the characteristics of teachers were all greater than 0.05. This indicates that the years of service of teachers have no significant impact on their preference for a classroom management mode.

Table 3: ANOVA for the Consistency of Management Modes Preference (Teachers)

Characteristic of Participant	Dimension	Source of Difference	Sum of Squares	df	Mean Square	F	Sig.
Teaching service years	Personality	Between Groups	.724	2	.362	1.931	.153
		Within Groups	13.308	71	.187		
		Total	14.032	73			
	Instruction	Between Groups	.008	2	.004	.028	.972
		Within Groups	10.543	71	.148		
		Total	10.552	73			
	Discipline	Between Groups	.397	2	.198	1.048	.356
		Within Groups	13.445	71	.189		
		Total	13.842	73			

5.4. Difference in classroom management preferences among students

To investigate whether undergraduates with varying academic levels have consistent preferences for online classroom management modes, an analysis of variance was conducted. The researchers used the GPA in the previous semesters to represent the academic level of the undergraduate students. As shown in Table 4, for the three dimensions of personality, instruction, and discipline, the significance levels of the tests on the characteristics of students were all greater than 0.05. This indicates that the academic levels of undergraduates have no significant impact on their preference for a teaching management mode.

Table 4: ANOVA for the Consistency of Management Modes Preference (Undergraduate students)

Characteristic of Participant	Dimension	Source of Difference	Sum of Squares	Df	Mean Square	F	Sig.
GPA for previous semesters	Personality	Between Groups	.428	3	.143	.635	.593
		Within Groups	109.479	487	.225		
		Total	109.907	490			
	Instruction	Between Groups	.274	3	.091	.548	.650
		Within Groups	81.298	487	.167		
		Total	81.573	490			
	Discipline	Between Groups	.776	3	.259	.998	.394
		Within Groups	126.258	487	.259		
		Total	127.034	490			

To further investigate the most effective online classroom management mode for undergraduate students, it was necessary to conduct additional experimental comparative analysis, given the different cognitions of teachers and students on this matter.

Table 5 displays three different modes: INV as the baseline mode, INA as the mode most recognised by students, and INVA as the mode most recognised by teachers. The online classroom management practice involves applying these three modes to individual classes. The analysis of variance for academic performance data indicates that the learning effects of students are significantly influenced by different online classroom management modes (all $p<0.05$).

Table 5: ANOVA for learning effects on three management modes

Management mode	Management mode	Mean Difference	F statistic	Significance
INV	INA	-8.807*		.000
	INVA	-5.960*		.000
INA	INV	8.807*	21.155(Sig. 0.000)	.000
	INVA	2.847*		.042
INVA	INV	5.960*		.000
	INA	-2.847*		.042

Note. INV represents interventionism, INA represents pure interactionism, INAV represents an interactionism mode with some interventionism features.

According to Figure 1, the interactionist mode of online classroom management demonstrates significantly better teaching results than the interventionist mode. Even between the two interactionist modes, the pure interactionist mode (INA) is more effective than the interactionist mode with certain interventionist features (INVA). Therefore, it can be concluded that INA, which is the mode preferred by undergraduates, is also the most effective mode for enhancing students' learning outcomes in online classrooms.

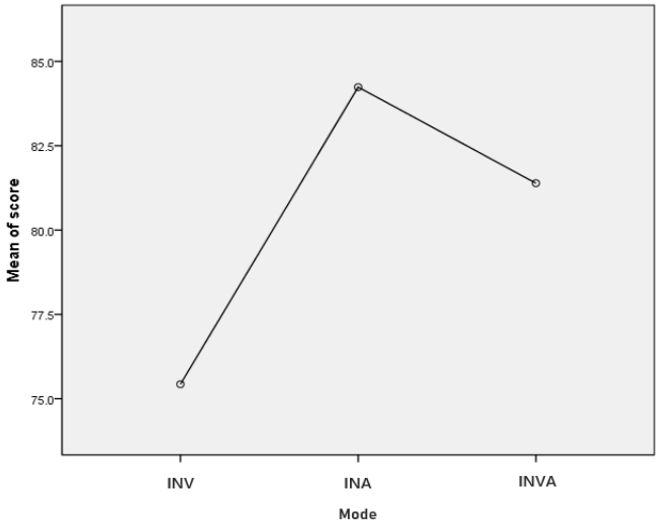

Figure 1: Means Plots for academic performance on different management modes

6. Discussion

As the COVID-19 pandemic draws to a close, uncertainty remains regarding when the next outbreak may strike. Fortunately, the education industry has already embraced a new option: online teaching. This innovative approach has been widely recognised and has transformed the mode and pattern of education. The development of smart devices and technology has propelled the growth of online education, making it an inevitable component of global higher education competition. As virtual reality technology continues to evolve and gain popularity, online education is expected to become even more extensive. Higher education institutions are now conducting research on online classroom management strategies, and enhancing their online classroom management level as an integral part of boosting their competitiveness. The continual exploration of classroom management methods demonstrates teachers' heightened sense of responsibility. Berger and Girardet (2021) have asserted that professional teachers with a strong sense of responsibility for teaching quality tend to support adaptive or beneficial classroom management styles.

Finding based on the data presented in Table 1, show that teachers from all levels of experience favour an online classroom management style that incorporates a slightly interventionist approach to interactionism, as they believe it has the greatest potential to improve students' academic performance. The findings suggest that while student-centred teaching is currently a prominent pedagogical approach, teachers still regard targeted intervention in students' learning processes as a valuable strategy for achieving positive learning outcomes. Glasser's (1998) "choice theory" suggests that teachers must help students understand the importance of working hard and being obedient to improve their lives. To achieve this, teachers must cultivate positive relationships with students and create active learning experiences that allow students to demonstrate mastery and success. Harasim (2012) developed the online collaborative learning theory (OCL) to emphasise that teachers not only facilitate the learning process by providing appropriate resources and learning activities to encourage students' learning, but also serve as members of the knowledge community under study

and ensure that core concepts, practices, and discipline standards are fully integrated into the learning cycle. Further, Thi and Nguyen (2021) found that the intervention model is the most useful among various classroom management modes after investigating the learning motivation and academic achievement of middle school students. Perhaps this result should be attributed to the weak self-control of elementary and middle-school students. Teachers believe that college students already have a certain degree of self-control, and only need a small amount of intervention. Table 1 also indicates that the mode of online classroom management most preferred by undergraduates is the interactionist mode. Coman et al. (2020) also discovered that college students prefer teachers who offer more interaction, communication, and motivation when learning online. This finding is in line with the research conducted by Taghizadeh and Amirkhani (2022), which revealed that fostering a positive, safe, and friendly atmosphere in online courses, as well as establishing a good teacher-student relationship, are significant factors in enhancing students' learning outcomes. When it comes to developing lessons, teachers who practise choice theory work make sure that student classroom activities are designed to satisfy the students' needs.

The analysis of data presented in Table 2 reveals a noteworthy and statistically significant distinction between the preferences of teachers and students regarding online classroom management behaviours. Several factors, such as the roles of teachers and students in the teaching process, the psychological inclination of college students towards independence and freedom, as well as their sense of belonging and experience, contribute to the varying perspectives of teachers and students on the class management mode (Sharma et al., 2020; Han & Rideout, 2022).

The findings presented in Table 3 demonstrate that the years of service among teachers do not exert a significant influence on their preference for a particular classroom management mode. These results align with the research conclusions of Ritter and Hancock (2007) who posited that the length of teaching experience alone does not impact teachers' approach to teaching management. However, these findings contradict the observations made by Zafer and Aslihan (2012) who discovered that pre-service teachers lean towards non-interventionism (minimal teacher control), embrace interactionism (shared control) during their internship and early career stages, and eventually gravitate towards complete teacher control as they gain more experience. It should be noted that Zafer and Aslihan's study specifically focused on primary school teachers and students.

According to the results presented in Table 4, the academic proficiency of undergraduates does not exert a significant influence on their preference for teaching management models. Similar research specifically focusing on online teaching has not yet been located. Nevertheless, this finding aligns with existing research on face-to-face instruction. For instance, a study conducted by Osborne and Boisvert (1989) revealed that participants consistently favoured humanistic approaches to classroom management, irrespective of their training programme or gender. Furthermore, Chiu and Tulley (1997) found that students, regardless of their grade, gender, or self-reported academic achievement, expressed a clear

preference for emphasising teacher-student interaction and collaborative decision-making.

The analysis presented in Table 5 reveals a significant impact of online classroom management mode on the learning outcomes of undergraduates. This finding aligns with previous research on classroom management. Mardiani and Azhar (2021) demonstrated that effective classroom management ensures successful teaching by instructors. Additionally, Wilkinson et al. (2020) emphasised the crucial role of teachers' classroom management abilities in fostering high-quality educational outcomes for students. Exploring the study conducted by Thi and Nguyen (2021) may shed light on the reasons behind the substantial impact of online classroom management mode on undergraduate learning outcomes. Their research showed that different classroom management approaches elicit varying degrees of motivation and dimension effects on student learning.

The practical comparison effect Figure 1 clearly indicates that the purely interactive mode of online classroom management yields the highest teaching effectiveness compared to other modes. This finding aligns with the research by Djigic and Stojiljkovic (2011) on the effectiveness of face-to-face instruction, where they observed that student achievement was highest when teachers employed an interactive mode and lowest when teachers utilised an intervention model. The reason behind this outcome is that the use of the interactive mode significantly stimulates students' enthusiasm for learning. As highlighted by Ruan and Yang (2018), enhancing learning motivation leads to the desired learning outcomes. According to Wut and Xu (2021), when students are in the active learning stage, they seek some awareness of or social presence in their learning environment, even in online classrooms. Students require clear social positions and identities in relation to their peers. Social presence theory notes that computer-based communication is lower in social presence than face-to-face communication (Biocca et al., 2003). However, the more a teacher agreed that there is a social presence in their classroom, the more likely they would agree that students are learning and progressing academically in online settings (Amundson, 2021).

Although many teachers work diligently to prepare for classroom instruction, mastering the techniques of monitoring and changing students' learning behaviour in the short term is a challenging task (Chang & Fang, 2020). Furthermore, limited pre-service training in classroom management may not be sufficient to deal with this situation. The effectiveness of classroom management has a significant impact on teacher self-efficacy, which in turn affects teaching quality (Lazarides et al., 2020). To improve online classroom management, it is essential to focus on two aspects. First, we must have a clear and accurate theoretical understanding of the rules of online classroom management. Second, we must master the practical methods of online classroom management. Regarding the former, we need to promote research on online classroom management actively. For the latter, it is advisable to concentrate on in-service professional development for teachers. This recommendation is consistent with Wilkinson et al.'s (2020) and Keshavarz et al.'s (2022) argument that effective in-service professional development is critical for teachers, and that professional

development in online classroom management is essential to prepare teachers for teaching in a digital environment. Amirkhani (2022) and Barrot and Fernando (2023) all found that teachers have a key role in building rapport and creating a positive, safe, and friendly atmosphere within online classes.

Additionally, Vallone et al. (2022) highlighted the impact of five multicultural personality traits, including Cultural Empathy, Open-Mindedness, Social Initiative, Emotional Stability, and Flexibility on teaching management style and how these traits affect the effectiveness of classroom management in intercultural conflicts. According to García-Peñalvo (2020), the digital transformation of teaching should imply the right technological decisions made by people and for people in order to achieve a more inclusive, participative, and human university supported by technology. As the demand for flexible and mobile learning increases, and the supply of economic and social benefits rises, colleges and universities are offering more and more online courses. Individuals who enrol in these online (degree) programmes may come from different countries or regions, and thus, adapting to and accepting a multicultural environment may be one of the crucial qualities of online classroom managers.

7. Conclusion and Recommendations

According to the results of the study, it can be concluded that undergraduate students prefer teachers to use an interactive online classroom management model, whereas most teachers tend to favour a moderately interventionist style of interactionism for their online classroom management approach. The experimental data further reveal a strong correlation between undergraduate students' academic performance and teachers' online classroom management mode, and found that the purely interactionist mode is the most conducive to students' academic achievement. College students prefer teachers who offer more interaction, communication, collaborative decision-making and motivation when learning online. Fostering a positive, safe, and friendly atmosphere in online courses, as well as establishing a good teacher-student relationship, are significant factors in enhancing students' learning outcomes. Although computer-based communication was found to have a lower social presence than face-to-face communication, if teachers recognise that there is a social presence in their classroom, they are more likely to agree that students are learning and progressing academically in online settings. The findings further suggest that, while the online environment is unique, the effective classroom management strategies in the online environment are the same as those considered effective in the face-to-face classroom.

It should be noted that classroom management strategies encompass a multitude of factors. Therefore, relying solely on the dimensions of personality, teaching, and discipline may not provide a comprehensive assessment of the overall effectiveness of online classroom management. Further research should focus on refining and expanding the evaluation framework for online classroom management modes to address these limitations, and enhance the understanding of this field. The impact of technology use, teacher training and five multicultural personality traits on teaching management style in an online setting may be

considered, including Cultural Empathy, Open-Mindedness, Social Initiative, Emotional Stability, and Flexibility.

Data availability statement
The datasets generated for this study are available on request to the corresponding author.

8. References

Alasmari, N.J., & Althaqafi, A.S.A. (2021). Teachers' practices of proactive and reactive classroom management strategies and the relationship to their self-efficacy. *Language Teaching Research*, 13621688211046351. https://doi.org/10.1177%2F13621688211046351

Albayrak, D., & Ateskan, A. (2022). Classroom management in higher education: A systematic literature review. *Journal of Further and Higher Education*, 1–17. https://doi.org/10.1080/0309877X.2022.2038099

Amundson, A. (2021). Social Presence Theory: Creating engaging and strong online learning communities at the K-12 level. *School of Education and Leadership Student Capstone Theses and Dissertations*. 4529. https://digitalcommons.hamline.edu/hse_all/4529

Ayebo, A., & Assuah, C. (2017). Exploring teachers' knowledge of classroom management and control. *Malaysian Journal of Learning and Instruction, 14*(1), 169–185. https://doi.org/10.32890/mjli2017.14.1.7

Barrot, J.S., & Fernando, A.R.R. (2023). Unpacking engineering students' challenges and strategies in a fully online learning space: The mediating role of teachers. *Education and Information Technologies*, 1–23. https://doi.org/10.1007/s10639-023-11598-8

Berger, J.L., & Girardet, C. (2021). Vocational teachers' classroom management style: the role of motivation to teach and sense of responsibility. *European Journal of Teacher Education,44*(2), 200–216. http://doi.org/10.1080/02619768.2020.1764930

Bernal, M.J., Desentis, C.L., Melgarejo, A.M., & Sepúlveda, J.M. (2019). Positive education: Transferring positive leadership principles to the higher education context. In *ICERI2019 Proceedings* (pp. 7346–7350). IATED. http://doi.org/10.21125/iceri.2019.1744

Biocca, F., Harms, C., & Burgoon, J. (2003). Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence: Teleoperators and Virtual Environments. 12* (5), 456–480. https://doi.org/10.1162/105474603322761270

Bygstad, B., Øvrelid, E., Ludvigsen, S., & Dæhlen, M. (2022). From dual digitalization to digital learning space: Exploring the digital transformation of higher education. *Computers & Education*, *182*, 104463. https://doi.org/10.1016/j.compedu.2022.104463

Chang, C. L. & Fang, M. (2020). E-learning and online instructions of higher education during the 2019 Novel Coronavirus Diseases (COVID-19) epidemic. *Journal of Physics: Conference Series, 1574*, 1-5. https://doi.org/10.1088/1742-6596/1574/1/012166

Chiu, L. H., & Tulley, M. (1997). Student preferences of teacher discipline styles. *Journal of Instructional Psychology, 24*(3), 168–175.

Coman, C., Țîru, L.G., Meseşan-Schmitz, L., Stanciu, C., & Bularca, M.C. (2020). Online teaching and learning in higher education during the coronavirus pandemic: Students' perspective. *Sustainability*, 12(24), 10367. https://doi.org/10.3390/su122410367

Djigic, G., & Stojiljkovic, S. (2011). Classroom management styles, classroom climate and school achievement. *Procedia-Social and Behavioral Sciences, 29*, 819–828. https://doi.org/10.1016/j.sbspro.2011.11.310

Djigic, G., & Stojiljkovic, S. (2014). Inventory for teachers' self-assessment in classroom management styles–Development and its psychometric characteristics. In *International Multidisciplinary Scientific Conferences on Social Sciences and Arts SGEM,* Albena, Bulgaria. https://doi.org/10.5593/sgemsocial2014/B11/S3.098

Dyer, T., Aroz, J., & Larson, E. (2018). Proximity in the online classroom: Engagement, relationships, and personalization. *Journal of Instructional Research*, 7, 108–118. https://doi.org/10.9743/JIR.2018.10

García-Peñalvo, F.J. (2021). Avoiding the dark side of digital transformation in teaching. An institutional reference framework for eLearning in higher education. *Sustainability*, *13*(4), 2023. https://doi.org/10.3390/su13042023

Ghateolbahra, A., & Samimi, F. (2021). Classroom management strategies in online environment: A Comparative Study on Novice and Experienced Teachers. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *12*(14), 510–516. https://turcomat.org/index.php/turkbilmat/article/view/10313

Gage, N.A., Scott, T., Hirn, R., & MacSuga-Gage, A.S. (2018). The relationship between teachers' implementation of classroom management practices and student behaviour in elementary school. *Behavioural disorders*, *43*(2), 302–315. https://doi.org/10.1177/0198742917714809

Glasser, W. (1998). *Choice theory: A new psychology of personal freedom.* Harper Collins.

Han, B., & Rideout, C. (2022). Factors associated with university students' development and success: Insights from senior undergraduates. *The Canadian Journal for the Scholarship of Teaching and Learning, 13*(1). https://doi.org/10.5206/cjsotlrcacea.2022.1.10801

Harasim, L. (2012). Learning theory and online technologies. Routledge. https://doi.org/10.4324/9780203846933

Hidalgo-Cabrillana, A., & Lopez-Mayan, C. (2018). Teaching styles and achievement: Student and teacher perspectives. *Economics of Education Review*, 67, 184–206. https://doi.org/10.1016/j.econedurev.2018.10.009

Jamba, N. & Norbu, L. (2023). Effective classroom management and students' academic performance: A study in one of the middle secondary schools in Bumthang district. *Polaris Global Journal of Scholarly Research and Trends*, 2(1), 11-24. https://doi.org/10.58429/pgjsrt.v1n1a83

Keshavarz, M., Mirmoghtadaie, Z. & Nayyeri, S. (2022). Design and validation of the virtual classroom management questionnaire. *International Review of Research in Open and Distributed Learning, 23*(2), 120–135. https://doi.org/10.19173/irrodl.v23i2.5774

Korpershoek, H., Harms, T., de Boer, H., van Kuijk, M., & Doolaard, S. (2016). A meta-analysis of the effects of classroom management strategies and classroom management programmes on students' academic, behavioral, emotional, and motivational outcomes. *Review of Educational Research*, *86*(3), 643–680. https://doi.org/10.3102/0034654315626799

Lathifah, Z.K., Helmanto, F., & Maryani, N. (2020). The practice of effective classroom management in COVID-19 time. *International Journal of Advanced Science and Technology*, *29*(7), 3263–3271. https://www.researchgate.net/publication/346649659_The_Practice_of_Effective_Classroom_Management_in_COVID-19_Time

Lazarides, R., Watt, H. M. G., & Richardson, P. W. (2020). Teachers' classroom management self-efficacy, perceived classroom management and teaching

contexts from beginning until mid-career. *Learning and Instruction, 69,* Article 101346. https://doi.org/10.1016/j.learninstruc.2020.101346

Mardiani, R., & Azhar, R.N. (2021). Overcoming challenges in virtual classroom to maintain effective classroom management and classroom culture: A case study at one vocational school. *Journal Sampurasun: Interdisciplinary Studies for Cultural Heritage*, *7*(2), 99–109. https://doi.org/10.23969/sampurasun.v7i2.4635

Martin, N.K. & Baldwin, B. (1993). An examination of the construct validity of the inventory of classroom management style. https://eric.ed.gov/?id=ED365723

Martin, J. (2019). Building relationships and increasing engagement in the virtual classroom: Practical tools for the online instructor. *Journal of Educators Online, 16*(1), n1. https://doi.org/10.9743/JEO.2019.16.1.9

Müller, C., & Mildenberger, T. (2021). Facilitating flexible learning by replacing classroom time with an online learning environment: A systematic review of blended learning in higher education. *Educational Research Review*, *34*, 100394. https://doi.org/10.1016/j.edurev.2021.100394

Munoz, L., Ferguson, J.R., Harris, E.G., & Fleming, D. (2022). Does empathy matter? An exploratory study of class-transition satisfaction in unplanned course interruptions. *Journal of Marketing Education*, 02734753211073891. https://doi.org/10.1177/0273475321107

Osborne, J. & Boisvert, G. (1989). Student teachers' classroom management preferences. *Journal of Humanistic Education and Development*, 28(1), 45-54. https://eric.ed.gov/?id=EJ402037

Philemon Patrick (2016). Impact of Classroom Environment on Student Academic Performance in Basic Science, München, GRIN Verlag, https://www.grin.com/document/1011211

Ritter, J., & Hancock, D.R. (2007). Exploring the relationship between certification sources, experience levels, and classroom management orientations of classroom teachers. *Teaching and Teacher Education*, *23*(7), 1206–1216. https://doi.org/10.1016/j.tate.2006.04.013

Ruan, B., & Yang, M. (2018, December). Application of online learning and classroom teaching. In: 2018 8th International Conference on Management, Education and Information (MEICI 2018) (pp. 1069-1073). Atlantis Press. https://doi.org/10.2991/meici-18.2018.214

Safiullah, Nadeem, H.A., & Asma. (2023). Impact of Classroom Management on students' Academic Achievement at Secondary School Level in Peshawar. *Journal of Social Sciences Review*, *3*(2), 19–26. https://doi.org/10.54183/jssr.v3i2.208

Sharma, M., Dwivedi, A., Sengar, A., & Solanki, M. (2020, January). Implementing innovative online teaching-learning practice in higher education: Understanding student perspective. In: *Proceedings of the 2020 11th International Conference on E-Education, E-Business, E-Management, and E-Learning* (pp. 136–140). https://doi.org/10.1145/3377571.3377577

Slisko, J. (2021). Facebook-supported tasks for exploring critical and creative thinking in a physics teaching course. *Knowledge Management & E-Learning: An International Journal 13*(1), 58–82. https://doi.org/10.34105/j.kmel.2021.13.004

States, J., Detrich, R. & Keyworth, R. (2017). Overview of classroom management. The Wing Institute. https://www.winginstitute.org/effective-instruction-classroom.

Stewart, D. (2008). Classroom management in the online environment. *Journal of online learning and teaching, 4*(3), 371–374. https://jolt.merlot.org/vol4no3/stewart_0908.pdf

Stone, C. (2019). Online learning in Australian higher education: Opportunities, challenges and transformations. *Student Success 10*(2), 1. https://doi.org/10.5204/ssj.v10i2.1299

Suartama, I. K., Setyosari, P., Sulthoni, S., & Ulfa, S. (2019). Development of an instructional design model for mobile blended learning in higher education. *International Journal of Emerging Technologies in Learning (Online)*, *14*(16), 4. https://doi.org/10.3991/ijet.v14i16.10633

Taghizadeh, M., & Amirkhani, S. (2022). Pre-service EFL teachers' conceptions and strategy use in managing online classes. *System*, *104*, 102671. https://doi.org/10.1016/j.system.2021.102671

Thi, T. T., & Nguyen, H. T. T. (2021). The effects of classroom management styles on students' motivation and academic achievement in learning English. *International Journal of Learning, Teaching and Educational Research, 20*(1), 223–239. https://doi.org/10.26803/ijlter.20.1.12

Tirmizi, S.R.H., Batool, A., Manzoor, S., Shah, H., & Ch, S.A. (2022). Classroom Management Strategies: A Comparative Study of University Teachers. *Webology (ISSN: 1735–188X)*, *19*(1). https://www.webology.org/data-cms/articles/20220422015943pmwebology%2019%20(1)%20-%20151%20pdf.pdf

Valente, S., Monteiro, A.P., & Lourenço, A.A. (2019). The relationship between teachers' emotional intelligence and classroom discipline management. *Psychology in the Schools, 56*(5), 741-750. http://doi.org/10.1002/pits.22218

Vallone, F., Dell'Aquila, E., Dolce, P., Marocco, D., & Zurlo, M.C. (2022). Teachers' multicultural personality traits as predictors of intercultural conflict management styles: Evidence from five European countries, *International Journal of Intercultural Relations, 87*, 51-64, https://doi.org/10.1016/j.ijintrel.2022.01.006.

Velásquez, A. M., Mendoza, D. F., & Nanwani, S. K. (2022). Becoming a competent classroom manager: A case-study of a pre-service teacher education course. *Teaching Education*, 1–23. https://doi.org/10.1080/10476210.2022.2048646

Wilkinson, S., Freeman, J., Simonsen, B., Sears, S., Byun, S. G., Xu, X., & Luh, H. J. (2020). Professional development for classroom management: a review of the literature. *Educational Research and Evaluation*, *26*(3-4), 182-212.

Wolff, C.E., Jarodzka, H., & Boshuizen, H.P. (2021). Classroom management scripts: A theoretical model contrasting expert and novice teachers' knowledge and awareness of classroom events. *Educational Psychology Review*, *33*, 131–148. https://doi.org/10.1007/s10648-020-09542-0

Wolfgang, C. H., & Glickman, C. D. (1980). *Solving discipline problems: Strategies for classroom Teachers*. Allyn and Bacon, Inc., Longwood Division, College and Professional Publications, 470 Atlantic Avenue, Boston, MA 02210. https://doi.org/10.1177/019263658106544623

Wut, T.M., & Xu, J. (2021). Person-to-person interactions in online classroom settings under the impact of COVID-19: a social presence theory perspective. *Asia Pacific Education Review*, *22*(3), 371–383. https://doi.org/10.1007/s12564-021-09673-1

Zafer, Ü.N.A.L., & Aslihan, Ü.N.A.L. (2012). The impact of years of teaching experience on the classroom management approaches of elementary school teachers. *International journal of Instruction*, *5*(2). https://dergipark.org.tr/en/download/article-file/59738

Appendix 1. Online Classroom Management Model Framework

Teachers' online classroom management behaviour dimensions

Dimension I, Personality——teacher's behaviour related to students' personality development and the overall psychological atmosphere of the classroom

1. Classroom psychological atmosphere

(1) The desire to communicate

(2) Friendly and candid communication between teachers and students

2. Student Personality Development

(1) Respect and understanding of students

(2) Responding to student needs

Dimension II, Instruction——teacher's behaviour related to the establishment and maintenance of classroom activities, space and time arrangements, and other learning conditions

1. Classroom routine management

(1) Management of learning materials

(2) Preparation before class

(3) In-class organisation

(4) Handling of unexpected situations

2. Classroom activity management

(1) Planning of classroom activities

(2) Organisation of classroom activities

(3) Participation and process of classroom activities

3. Management of exercises and assignments

(1) Arrangement of assignments

(2) Correction and feedback of assignments

Dimension III, Discipline——teacher's behaviour related to the formulation and enforcement of student's behaviour rules

1. Formulation of rules

(1) Rules of study

(2) Rules of life

2. Enforcement of the rules

(1) Rewards after compliance

(2) Handling after violation.

Appendix 2. Questionnaire on the Relationship between Online Classroom Management Mode and Academic Performance

Guidelines for filling out the form:

Which of the teacher classroom management behaviours listed in the table do you think has the most positive impact on students' academic performance? Please select the option you agree with. Thank you for your support and cooperation!

1. Identity Information

Occupation： teacher/student

Gender：male/female

(Filled by teachers) Working years: less than 5 years / 5–10 years / more than 10 years

(Filled by students) GPA of the last semester：0-1.0/1.1-2.0/2.1-3.0/3.1-4.0

(Filled by students) Grade：freshman/sophomore/junior/senior

2.Teachers' classroom management behaviour

The Specific Performance of Online Classroom Management Dimensions			Mode
Personality (Teacher's behaviour related to students' personality development and the overall psychological atmosphere of the classroom)	1	Regarding facial expressions in online classes, a teacher should	1 2 3 4 5
		○ Serious expression, showing a sense of authority ○Serious expression, showing a certain affinity ○Friendly expression, but showing a certain sense of authority ○Friendly expression, showing affinity ○Poker face	
	2	Regarding the self-introduction in the first class, a teacher should	1 2 3 4 5
		○ Ask each student to make a detailed self-introduction and note the characteristics of the students ○ Ask each student to give a brief self-introduction ○The teacher first introduces himself, and then asks the whole class to introduce themselves ○ The teacher introduces themselves and students introduce themselves voluntarily ○ Teacher and students do not introduce themselves	
	3	Before class time, some students have entered the online classroom, a teacher should	1 2 3 4 5
		○Ask the students to preview the content of the class ○Remind the students to prepare for class ○Chat with the students about the learning experience of the last class ○Play music at low volume and chat with the students to understand their mental state	

		○Don't do anything, just wait for class	
	4	If some students need to leave the online classroom during class time for some reason, a teacher should	
		○Not allow them to leave, unless absolutely necessary ○Students are strongly advised to leave after class ○ After discussing with the student, decide whether to grant leave ○ Explain the content and function of this lesson to students and let them decide for themselves ○No restrictions on students leaving	1 2 3 4 5
	5	When a student reports that the signal is delayed due to network problems during class time, a teacher should	
		○Require the student to repair the network in time, so as not to affect the effect of listening to the class ○Tell the student to make do with it first and then fix it after class ○ Ask about the specifics of the network problem and give suggestions for repairs ○ Reassure the student and advise them to search for fixes online ○Powerless to such things	1 2 3 4 5
	6	When a teacher says something wrong in the online classroom, the teacher should	
		○Refuse to admit the mistakes ○Use humour to resolve embarrassment, find excuses to cover up ○Sincerely apologise ○A subtle euphemism to explain ○It doesn't matter, no need to deal with it	1 2 3 4 5
	7	When it is necessary to adjust the lesson schedule for some reason, a teacher should	
		○ Notify students of lesson adjustment via email or social media ○ Ask the monitor or other person to notify students of lesson adjustment ○ Inform students that the lesson has been adjusted and explain why ○Inform students that the lesson needs to be adjusted and ask for students' opinions	1 2 3 4 5

		○It doesn't matter whether notify or not	
	8	For students who are struggling in a subject, the teacher should ○Criticise them and give them more scrutiny ○Give them a dedicated study plan and check the implementation ○Understand the reasons and give suggestions ○ Discuss with them to develop a targeted learning plan ○Let it be, without intervention	1 2 3 4 5
Instruction (Teacher's behaviour in relation to the establishment and maintenance of classroom activities, space and time arrangements, and other learning conditions)	1	Regarding the uploading of learning materials, a teacher should ○ Upload all materials and ask students to study them carefully ○ Upload materials the teacher considered important ○Upload materials agreed on by teacher and students ○Communicate with students and upload only those they need ○Needn't upload	1 2 3 4 5
	2	Regarding the introduction of the chapter content before each start of a new lesson, a teacher should ○Introduce students in detail to the parts of the content they need to master or understand ○Emphasise only what must be mastered ○ Introduce and explain the content and function of each part ○ According to the level of students, only introduce the parts that suitable for them ○It doesn't matter whether introduced or not	1 2 3 4 5
	3	When a student raises questions about what a teacher is saying in class, the teacher should ○Stop them right now and continue lecturing ○Tell the student to discuss after class ○Answer the problem in detail and encourage the student to ask questions timely ○Continue the lecture after briefly resolving the question raised ○ Ignore the question and continue the lecture	1 2 3 4 5
	4	When the monitoring shows that a student is depressed, a teacher should ○Roll call to remind the student to focus on learning	1 2 3 4

		○Don't call name to remind the student not to be distracted ○Adjust the pace of the lecture and do some fun class activities ○Ignore them for the time being, communicate with them after class ○Needn't to do anything	5
	5	When a student gives wrong answers to questions, a teacher should	
		○Criticize and correct them ○Clearly point out the mistakes and ask the student to study more attentively ○Euphemistically point out mistakes and give the student encouragement ○ Give several different answers and brainstorm which is more reasonable ○No comments required	1 2 3 4 5
	6	In the event of a sudden power outage or equipment failure, a teacher should	
		○Use social app or email to notify students to study the content of this lesson by themselves, and check the effect of self-study in the next lesson ○Send courseware materials to students and require them to study by themselves ○Discuss with students in advance to agree on the response to such incidents ○Ask students through social media how to continue the class ○Wait with peace of mind	1 2 3 4 5
	7	Regarding the time of online interaction between teacher and students, a teacher should	
		○ Strictly adhere to the pre-planned time period ○Try to do it within a planned time period and only fine-tune when absolutely necessary ○When planning the activity time, students' opinions are partially taken into account ○ Encourage students to do their best, regardless of time ○It's entirely up to the student	1 2 3 4 5
	8	Regarding the grouping of classroom activities,	
		○The teacher assigns groups, and students are not allowed to change ○ The teacher assigns groups, but allows students to switch groups when they have reasons	1 2 3 4

		○Teacher and students discuss and decide the grouping method together ○Students are grouped by themselves, and the teacher only make small changes ○ Students have full discretion on how to group	5
	9	Regarding the participants in classroom activities, a teacher should	
		○ Designate the entire list of students to participate in the activity ○ Designate part of the list of students to participate in the activity ○Ask students to choose the representatives to participate in the activity ○ Encourage and guide more students to participate in activities ○Decide whether student participation in the activity is voluntary	1 2 3 4 5
	10	After assigning classroom exercises to students online, a teacher should	
		○Monitor students' situation through cameras and warn the students who desert at any time ○Wear a headset and stare at the chat session window, always ready to respond to student questions ○ Pay attention to the students' expressions and actions when they doing the exercises, and evaluate the students' listening response ○Record students' feedback on the exercises and prepare for the next solving and explaining session ○Leave for a while	1 2 3 4 5
	11	When a student submits an assignment after the specified time, a teacher should	
		○Reject it ○Accept after giving warning ○Find out the reason before deciding how to deal with it ○Accept it happily ○Don’t care	1 2 3 4 5
	12	When grading homework, it is found that a student has made a lot of mistakes, a teacher should	1

		○Return directly, ask for rewrite ○ Circle each question that did wrong and point out where it's wrong ○Communicate with the student to find out the reasons for mistakes ○ Make time to tutor the student on wrong topics ○It's not a big deal	2 3 4 5
Discipline (Teacher's Behaviour concerning the formulation and implementation of rules of conduct)	1	Regarding the issue of students attending online classes on time, a teacher should ○Emphasise that all students must enter the live broadcasting room ten minutes before class ○Students are generally required to enter the live broadcast room before class ○Advise students to attend class on time and explain the coherence and importance of class content ○Organise students to discuss the necessity of attending classes on time to arouse their attention ○No requirement about this	 1 2 3 4 5
	2	Regarding the issue of students turning on cameras during class time, a teacher should ○ Emphasise that all students must be on during class, no matter what ○Students are required to be on during class, except for special circumstances ○ Advise students to keep the camera on as much as possible, and explain that doing so can enhance the self-discipline of listening to the lecture ○Decisions made by teacher and students after joint consultation ○It doesn't matter whether it is on or not	 1 2 3 4 5
	3	Regarding the student who performs actively and follow the rules in classes, a teacher should ○Praise and call on everyone to follow this student as an example ○ Praise euphemistically and pay more attention to this student ○Inquire about the situation of students, and give targeted rewards ○Communicate with the student and decide whether or not to praise them publicly after understanding their ideas ○Needn't do anything	 1 2 3 4 5

	4	When a student is making a noise or chatting loudly in the online classroom, a teacher should 〇Interrupt lectures to strengthen the discipline 〇Give reminders with hints 〇Change teaching methods to attract students' attention 〇Ignore for the time being and communicate separately after class 〇Don't care	1 2 3 4 5
	5	When plagiarism is found in student's homework, a teacher should 〇 Severely criticise the student and order corrections 〇Euphemistically persuade the student 〇Warn the whole class without naming 〇Talk privately to find out the reason 〇Don't mind such things	1 2 3 4 5
	6	When two students verbally attack each other in the online classroom, a teacher should 〇 Criticise them harshly and give them a warning 〇Gently criticise them and let them make self-criticism 〇 Make a fair judgment after understanding the reasons 〇 Encourage students to be friendly and understand each other, and shake hands 〇Don't deal with it, just ignore it	1 2 3 4 5
	7	When cameras show a student eating or being dishevelled during class time, a teacher should 〇Criticise them sharply 〇Roll call for correction 〇Make a private connection to persuade them to correct 〇Don't deal with it for the time being, talk to him after class 〇Needn't do anything	1 2 3 4 5
	8	When a student is late, absent from class, or leaves the online classroom for no reason, a teacher should 〇Give severe punishment 〇Give a gentle warning 〇 Deal with it as appropriate after understanding the reason 〇Follow the advice of the classmates 〇Ignore this phenomenon	1 2 3 4 5

Appendix 3. Reliability and Validity for the Questionnaire

Reliability Statistics

Dimension	N of Items	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
Personality	8	.658	.661
Instruction	12	.717	.733
Discipline	8	.714	.720

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.872
Bartlett's Test of Sphericity	Approx. Chi-Square	2555.776
	df	378
	Sig.	.000