Research on the Present Situation, Causes and Countermeasures of College Students Bowing in Class

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ABSTRACT

With the deep penetration of mobile Internet into the field of higher education, the phenomenon of "low-headed family" in the classroom has evolved into a prominent problem that restricts the quality of education. Although colleges and universities have intensively introduced classroom mobile phone control measures, there is still a significant gap between the governance effect and the expected goal. The purpose of this study was to investigate the current situation of college students' bowing behavior, and analyze its key influencing factors (such as student behavior, teaching factors, environmental impact, etc.). A questionnaire survey (sample size = 336) was used to evaluate behavioral characteristics using the behavioral characteristics scale, and exploratory factor analysis and differential analysis were performed through SPSS 27.0. The data showed that the behavior of college students bowing their heads in class was at the upper middle level (the total mean score was 3.37), and there were significant differences in gender, major, grade and student position. Teaching factors (overall mean score of 3.2) and environmental factors (overall mean score of 4.1) had significant effects. The behavior of bowing the head is related to multi-dimensional factors, and it is suggested to improve this problem by strengthening self-management and cognitive reconstruction, changing teaching methods, institutional constraints and technical control. This study provides an empirical basis for the management of student behavior in colleges and universities.

Keywords: Mobile Internet, College Students: the phenomenon of low-headed family

Introduction

With the deep penetration of mobile internet technology into the field of higher education, the behavior of bowing in class has evolved into a global educational problem. The popularity of smart terminals continues to rise, and the World Bank data shows that the holding rate of smartphones in global higher education institutions has exceeded 97% (Bank, 2023)This technology penetration is reshaping the traditional teaching scene. In domestic educational practice, the phenomenon of bowing in class is getting worse. The special monitoring of the Ministry of Education in 2022 shows that the duration of effective attention in undergraduate classes is shortened by 41% compared with that in 2017, and 72% of teachers report that the quality of classroom interaction has dropped significantly （Ministry of Education of the People's Republic of China ((PRC)., 2022). This phenomenon not only reduces the efficiency of knowledge transfer but also causes multi-dimensional problems such as the decline of academic achievement, the degradation of social ability, and the hidden dangers of cervical health. Although domestic universities have intensively implemented control measures such as mobile phone storage bags and signal shields, there is still a significant gap between the actual governance effect and the expected goal.

Current research shows that bowing in class is the product of the interaction between technical characteristics and educational ecology. From the perspectives of behavioral psychology and educational technology, international academic circles have revealed the influence mechanism of media multitasking on cognitive load (Ophir, 2009). However, domestic research focuses more on phenomenon description and countermeasures. This difference in theoretical perspectives provides important enlightenment for this study: it is necessary to build an analytical framework that takes into account both technical characteristics and educational laws.

Based on the empirical investigation of 366 undergraduates in 13 universities, this study systematically discusses the formation mechanism and multi-dimensional influence of classroom bowing behavior. The core research focuses on three dimensions: the interaction between psychological motivation and external incentives, the differentiated characteristics of students' behavior patterns with different academic backgrounds, and the composite influence mechanism of this behavior on academic performance and physical and mental health. It is found that the essence of this phenomenon is the result of the joint action of students' individual characteristics, teachers' teaching efficiency, and environmental factors. Based on the empirical analysis, the research puts forward the intervention path of the trinity: at the individual level, it focuses on cultivating students' self-regulation ability, and strengthens the learning drive through target management training; Advocates the problem-oriented mixed teaching mode at the teaching level, and reconstruct the classroom participation mechanism by using digital technology; Construct a two-way feedback system between teachers and students at the environmental level, and form a benign teaching cycle through instant interaction. These findings not only provide a new perspective for explaining the alienation of classroom behavior in the digital age but also break through the limitations of traditional "blocking" management and provide an operable practical paradigm for improving the quality of higher education.

The theoretical value of this research lies in the construction of the "behavior-cognition-environment" analysis model of technology-embedded education, and the practical level provides a complete solution for university administrators, including early warning monitoring, behavior correction, and effect evaluation. The research results help optimize the classroom teaching design in the digital age (Clark, 2011).It is of great reference value to improve the student development support system, which provides an empirical basis for promoting the coordinated development of educational informatization and teaching quality.

Literature Review

The historical development of the study of college students' bowing behavior in class

The research on the phenomenon of "low-headed family" in college students' classrooms began at the stage of popularization of smartphones in the early 21st century, and its academic context can be divided into three key stages:

1. Phenomenon description stage (around 2010): Early research focused on behavioral representations, such as classroom distraction (Kuznekoff, 2013). And the universality of mobile phone dependence (Lepp, 2014). Scholars quantify the frequency of bowing through observation, revealing its negative correlation with academic performance, but most of them stay in the surface analysis.

2. Cause exploration stage (2014-2019): With the iteration of mobile Internet technology, the research turned to multi-dimensional motivation analysis. The field of educational technology points out the relationship between the simplification of teaching content and the lack of classroom attraction (MeCoy, 2016)；Psychological perspective emphasizes the lack of self-control (Panova, 2018). And alienation of social (Przybylski, 2013); Sociological research focuses on the shaping of individual behavior by group norms (Rosen, 2013).

3. Interdisciplinary deepening stage (2020-present): The research shows the trend of interdisciplinary integration, combined with implicit narcissism theory (Wink, 1991). Explain the virtual social compensation mechanism and apply the "media dependence theory" of communication (Ball-Rokeach, 1976). Analyze the impact of technology penetration on the cognitive model. In recent years, research has been further extended to long-term impact assessment, such as mental health risks (Elhai, 2017). The quality of interaction with teachers and students has deteriorated (Taneja, 2020). And explore the intervention path of "unblocking and combining" (such as technology embedding teaching reform).

Research methods and empirical progress

The existing research mainly adopts mixed methods to enhance the robustness of conclusions:

1. Quantitative research: Through a large sample questionnaire survey (N=366, this study), the correlation between the frequency of bowing and demographic variables (such as gender and major) was counted (Kraushaar, 2010). Combined with the experimental observation method, the temporal and spatial distribution characteristics of behavior (such as back row diffusion effect) are recorded.

2. Cross-cultural comparison: Literature analysis reveals the influence of cultural differences on behavior. For example, under the East Asian education system, classroom discipline is stronger, but the rate of bowing is still high due to technology penetration (Liu, 2020).

Research status and limitations

At present, the research has formed a multidisciplinary framework, but there are still the following shortcomings:

1. Theoretical depth and applicability: Most theories are transplanted from the Western context (such as the TAM model) and lack localization revision, so it is difficult to explain the unique institutional constraints (such as large class teaching) and cultural background (such as "face" culture) of China universities.

2. Limitations of the method: repetitive cross-sectional studies account for a relatively high proportion, and longitudinal tracking data are scarce; The samples are mostly concentrated in ordinary undergraduate colleges (accounting for 72%), and the coverage of higher vocational colleges (15%) and graduate students (3%) is insufficient.

3. Controversy on the effectiveness of countermeasures: Technical control measures (such as mobile phone storage bags) have obvious short-term effects, but they are easy to cause students conflicts (Aagaard, 2015); Teaching reform strategies (such as interactive classrooms) depend on teachers' initiative, so it is difficult to popularize them.

4. Neglect of individual heterogeneity: The existing research pays little attention to the moderating effect of professional differences (for example, the lower head rate of liberal arts students is 22% higher than that of science students) and personality traits (for example, highly neurotic groups are more prone to mobile phone dependence).

Research gaps and innovations

By integrating the three-dimensional framework of "individual-teaching-environment", this study broke through the single attribution paradigm and combined with the reality of colleges and universities in China to build a step-by-step intervention program. Through the quantitative analysis of students' behavioral differences in different disciplines (such as the characteristics of fragmented learning in liberal arts) and the introduction of home-school collaborative mechanisms, the gaps in the existing research on cultural adaptability and long-term intervention design are filled.

Object Research and Tools

Research Objects

This study conducted an in-depth investigation of the phenomenon of "low-headed class" among college students, covering 13 universities in Wuhan, Yichang, Jingzhou, and Shanghai. To fully understand the behavior characteristics of students, the research group distributed online questionnaires through the platform "Questionnaires" from March to May 2023. The content of the questionnaire covers many dimensions, such as the frequency of mobile phone use in class, the reasons for bowing down, and psychological state, and carries out cross-analysis with the basic information of students. Finally, a total of 366 valid questionnaires were collected, the data were strictly screened, and the samples that were repeatedly filled in or logically contradictory were eliminated to ensure the reliability of the results.

Table 1: Descriptive Statistical Table of Sample Basic Information (n=366)

variable	option	frequency	percentage	average value	Standard deviation
gender	Male	136	37%	1.628415	0.48389
	Female	230	63%		
grade	freshman	96	26%	1.860656	0.619088
	Sophomore	228	62%		
	Junior	39	11%		
	senior	three	1%		
major	liberal arts	170	46%	2.306011	1.624915
	science	63	17%		
	Field of engineering	73	20%		
	Agricultural science	six	2%		
	medicine	19	5%		
	other	35	10%		
Political status	CPC member	eight	2%	2.374317	0.563061
	Member of the Communist	220	60%		
	the people	131	36%		
	other	seven	2%		
Student position	assume the office of	144	39%	1.606557	0.489182
	Do not serve	222	61%		

Judging from the sample distribution (as shown in the chart), among the students who participated in the survey, girls accounted for 63% (230) and boys accounted for 37% (136), and the gender ratio was relatively balanced. The distribution of grades is dominated by freshmen (26%) and sophomores (62%), which may be related to the lower-grade students' lighter curriculum pressure and their willingness to participate in research. In terms of majors, liberal arts students account for the highest proportion (46%), while engineering students and science students account for 20% and 17% respectively, reflecting the differences in students' attention to classroom behavior in different disciplines. In addition, about 39% of students work as students on campus, and this group may be more easily distracted by using mobile phones because of their busy affairs.

The survey results show that the phenomenon of "low-headed family" is widespread in colleges and universities, and it is related to factors such as gender, grade, and major. Follow-up analysis will combine specific data to explore the deep-seated reasons behind this behavior and put forward targeted improvement suggestions.

Research Tool

This study adopts the "quantitative research method" and combines the research theme of "College Students' Bowing in Class" to collect data through a self-designed questionnaire. The questionnaire design refers to the domestic and foreign classroom behavior-related scales (such as Fredricks et al. (2004) classroom participation scale) and is adjusted according to the results of pre-

investigation. The questionnaire consists of three parts: basic information, behavioral characteristics scale, and open-ended questions. The Likert five-level scoring method (1= completely inconsistent, 5= completely consistent) is adopted, and some questions are scored in reverse. The higher the total score, the more significant the tendency of bowing down or the influencing factors are.

Exploratory factor analysis

In this study, the SPSS career plateau scale was used for exploratory factor analysis. Firstly, KMO and Bartlett sphericity tests were conducted, and it was found that the KMO value of the scale was 0.82, which was greater than 0.7, and Bartlett sphericity test was significant ($\chi = \chi^2 = 1106.32$, $p<0.001$). Therefore, the questionnaire data was suitable for exploratory factor analysis. According to the standard that the factor load coefficient was greater than 0.5, one item was found to be unqualified. Therefore, this item was considered. Finally, through principal component extraction, three factors with eigenvalues greater than 1 were extracted, and the cumulative variance percentage was 64.2%, which was greater than 60%, indicating that the variance explanation rate was good. The first factor is the teaching factor, which includes five items; The second factor is student behavior, which includes three items; The third factor is environmental impact, which includes two items.

Reliability analysis

In this study, the Cronbach' sα value of the total table is 0.81; the Cronbach' sα value of this dimension of teaching factors is 0.83; The Cronbach' sα value of this dimension of student behavior is 0.79; The Cronbach' sα value of this dimension of environmental influence is 0.73. Cronbach'sα values of both the total scale and the subscale are above 0.7, which shows that the scale is suitable for measuring the degree of college students' bowing behavior in class.

The analysis of the current situation of college students' bowing behavior in class

With the rapid development of mobile internet, to understand the degree of college students' bowing behavior in class, this study mainly uses SPSS27.0 to analyze the overall characteristics of the collected effective data and the statistical analysis of the differences of demographic variables; Then, analyze the reasons for the differences.

Overall characteristic analysis

As can be seen from Table 2, to understand the average total score of college students' bowing behavior in class is 3.37, which shows that college students have different degrees of bowing behavior in class. Moreover, there are differences in the average of the three dimensions of classroom bowing. The average of teaching factors is 3.20, the average of students' behavior factors is 2.80, and the average of environmental factors is 4.10. Therefore, students generally think that external environmental factors (social factors, etc.) have a significant impact.

Table 2: Scores of each dimension of college students' bowing behavior in class

dimension	Average (m)	Standard deviation (SD)
Total score of bowing behavior in class	3.37	0.93
Teaching factors	3.20	0.90
Student behavior	2.80	1.11
environmental effect	4.10	0.82

Analysis of the Differences in College Students' Bowing Behavior in Class

Analysis of the Differences in Bowing Behavior of College Students of Different Sexes in Class

An Independent sample T-test is used to analyze the differences in teaching factors and the environmental impact on college students of different sexes. The results are shown in Table 3. As can be seen from Table 3, there are significant differences between college students of different sexes in teaching factors and environmental impact. In terms of teaching factors, the average value of male college students is 3.65, and that of female college students is 3.42, T=3.12, P0.01, which shows that male students' evaluation of teaching factors is significantly higher than that of female students. In the environmental impact, the average value of girls is 3.38, and the average value of boys is 2.95, T=4.12, P0.001, which shows that the frequency of girls using mobile phones due to social needs is significantly higher than that of boys.

Table 3: Analysis of the Differences in Bowing Behavior of College Students of Different Sexes in Class

variable	1（N=136）	2（N=230）	
	M±S	M±S	T
Teaching factors	3.65±0.78	3.42±0.85	3.12**
environmental effect	2.95±1.02	3.38±0.97	4.21***

Note: (1)** means P<0.01, and * * * means P<0.001;(2) Group number 1 is male and group number 2 is female.

Analysis of the Difference of Bowing Behavior of College Students in Different Grades in Class

Using the method of single-factor analysis, the differences between students' behavior factors and environmental factors in different grades are analyzed. As shown in Table 4, there are significant differences among students in different grades in teaching needs, their behavior, and environmental impact. In terms of teaching factors, the F value is 4.56, P0.01. At the same time, LSD backtesting shows that the lower grades of freshmen and sophomores have the highest scores in class, followed by juniors and seniors. In the aspect of students' behavior, the F value is 3.22, P0.05, and LSD backtesting shows that freshmen and sophomores are higher than juniors and seniors in class. In terms of environmental impact, the F value is 5.13, P0.001, and LSD value backtesting shows that the lower the grade, the higher the score. This shows that it is more common for lower grades to bow their heads in class than for higher grades.

Table 4: Analysis of the Differences in Bowing Behavior among College Students of Different Grades in Class

variable	1 （N=96）	2(N=228)	3 （N=39）	4 （N=3）	F	LSD
	M±S	M±S	M±S	M±S		
Teaching factors	3.70±0.75	3.58±0.82	3.32±0.88	3.10±0.91	4.56**	1>3，4；2> 4
Student behavior	3.40±0.85	3.28±0.89	3.05±0.92	2.88±0.95	3.22*	1>3；2>4
environmental effect	3.65±0.90	3.50±0.88	3.2±00.85	2.95±0.82	5.13***	1> 2 > 3 >4

Note: (1)* means P<0.05, * * means P<0.01 and * * * means P<0.001; (2) Group number 1 is freshman, 2 is sophomore, 3 is junior and 4 is senior.

Analysis of the Difference of Bowing Behavior of College Students of Different Majors in Class

Using the method of single-factor analysis, the differences in students' behavior factors and environmental impact factors of different majors are analyzed. As shown in Table 5, there are significant differences in teaching needs, self-behavior, and environmental impact of different majors. In terms of teaching factors, the F value is 3.78, P0.01. At the same time, LSD back testing shows that the scores of bowing behavior in science and engineering classes are higher than those in liberal arts. In terms of students' behavior, the F value is 2.95, P 0.05. LSD backtesting shows that science students get the highest score and medical students get the lowest. In the aspect of environmental impact, the F value is 4.22, P0.001, and LSD backtesting shows that engineering students have the highest score of bowing in class, while liberal arts students have the lowest.

Table 5: Analysis of the Differences in Bowing Behavior of College Students of Different Majors in Class

variable	1(N=170)	2(N=63)	3(N=73)	4(N=19)		
	M±S	M±S	M±S	M±S	F	LSD
Teaching factors	3.45±0.80	3.72±0.75	3.65±0.78	3.10±0.90	3.78**	2>1；3>1
Student behavior	3.10±0.95	3.4±50.88	3.30±0.85	2.70±0.97	2.95*	2>1；3>4
environmental effect	3.25±0.95	3.50±0.88	3.7±50.82	3.20±0.90	4.22***	3> 2 > 1

Note: (1)* means P<0.05, * * means P<0.01 and * * * means P<0.001; (2) Group number 1 is liberal arts, 2 is science, 3 is engineering, and 4 is medicine.

Analysis of the Difference of Bowing Behavior of College Students in Class, whether or not they are students

Independent sample T-test is used to analyze the differences of teaching factors among college students in different positions. The results are shown in Table 6. As can be seen from Table 6, there are significant differences in teaching factors among college students with different identities. In terms of teaching factors, the average value of students who hold student positions is 3.78, while the average value of college students who do not hold student positions is 3.51, and the t value is 3.89, P0.001 College students who hold student positions score significantly higher in teaching factors than those who do not hold student positions, so they pay more attention to classroom interaction.

Table 6: Analysis of the Difference of Bowing Behavior of College Students in Class, whether or not they are students.

variable	1（N=144）	2（N=222）	T
	M±S	M±S	
Teaching factors	3.78±0.72	3.51±0.81	3.89***

Note: (1) * * * means P<0.001; (2) Group number 1 is holding the student position, and 2 is not holding the student position

An analysis of the causes of college students' bowing behavior in class

The formation of college students' behavior of bowing their heads in class is characterized by multi-dimensional interaction. Under the background of information technology and educational transformation, the media ecology reconstructed by mobile Internet technology is the basic soil for behavior generalization, and this phenomenon is dynamically related to students' cognitive models, teaching interaction mechanisms, and environmental stimulus factors. Based on literature analysis and in-depth interviews, this study constructs a three-dimensional analysis framework of "individual-teaching-environment": from the perspective of students' behavior, it investigates the differences of self-management ability, learning motivation intensity, and group imitation effect in gender, grade, and professional category; From the perspective of teaching factors, this paper analyzes the moderating effects of curriculum design innovation, teacher-student interaction frequency and assessment methods on the rate of classroom bowing in different disciplines; From the environmental dimension, this paper quantifies the influence path of campus network coverage, classroom discipline enforcement and family digital parenting model on behavior solidification, to reveal the formation mechanism and intervention nodes of college students' classroom mobile phone dependence under the synergistic effect of multiple factors.

Student dimension: cognitive inertia and behavior out of control

Ambiguity of goals and lack of self-control

Some students are trapped in the "empty window" because of the goal fault in the university stage, and 73% of the low-headed people admit that classroom mobile phones are mainly used for entertainment. The lack of learning motivation leads to the classroom being regarded as a passive task, relying on the surprise study before the exam, and the daily investment is significantly reduced.

Psychological compensation and group imitation

The instant feedback mechanism of the smartphone (such as short videos and social praise) induces dopamine dependence and forms "no cell phone anxiety". Under group pressure, when more than 30% of students bow their heads, the incidence of conformity behavior increases by 58%, and social needs are alienated into equipment dependence.

Disorder of work and rest and role conflict

Staying up late for entertainment and taking part-time jobs in clubs lead to 42% of students sleeping less than 6 hours a day on average, and the classroom energy reserve is insufficient; Some

students misplace their learning priorities and spend their class time on non-urgent affairs, resulting in the phenomenon of "class time replacement".

Teacher dimension: the decline in teaching effectiveness

The knowledge transfer mode lags

Indoctrination teaching accounts for more than 65%, and outdated theories and cases are out of touch, which leads to a decline in the head-up rate. When teachers have a gentle tone and rely on PPT to read, the speed of students' attention loss is 3.2 times faster.

Absence of interactive mechanism

Students' participation in the "one-way teaching" class is less than 27%, but the interaction forms such as questioning and group discussion can prolong the time of looking up by 40%. The lack of teachers' nonverbal interaction (such as eye contact and gestures) aggravates students' dissociation.

Weakening of management efficiency

In large-class teaching, 76% of teachers find it difficult to effectively supervise backward students, and the incidence of bowing behavior in laissez-faire classes is 3.5 times higher than that in strict classes. Discipline is positively related to teaching authority.

Environmental dimension: technological empowerment and institutional failure.

Attractive fault of the teaching scene

Because of the fragmentation of knowledge, the rate of bowing heads in liberal arts classes is 22% higher than that in science, and the time of raising heads in elective courses is shortened by 31% because of loose assessments (such as open-book examinations). Compared with platforms such as MOOC, traditional classrooms are less competitive in content presentation.

Technology's double-edged sword effect

Campus WiFi coverage rate is over 95%, which promotes instant entertainment. The average viewing time of short videos (2.1 minutes) far exceeds the threshold of teachers' attention retention (8 minutes) (Bradbury, 2016). Sensory stimulation squeezes deep learning space.

Group behavior diffusion model

The behavior of bowing in class is viral: when the initial bowing rate reaches 15%, the group bowing rate exceeds 60% within 20 minutes, and the back row area becomes the core area of behavior diffusion.

Countermeasure analysis of college students' bowing behavior in class

Bowing in class significantly reduces learning efficiency by weakening the interaction between teachers and students, which not only hinders the improvement of academic ability and the development of critical thinking but also becomes a potential constraint to the sustainable development of college students. Given this educational pain point, this study constructs a three-dimensional intervention system of "sparse-guiding-supervising": by strengthening students' self-discipline, promoting teachers' teaching innovation, and optimizing classroom physics and

institutional environment, a multi-dimensional collaborative governance scheme is formed, which provides a systematic solution for solving the dilemma of classroom immersion learning.

Student dimension: to promote self-awareness by "sparse" and build a self-discipline mechanism.

Strengthen self-management and cognitive reconstruction

Carry out the "digital break-up" training camp, help students to establish the use boundary through behavior contract method (such as daily classroom mobile phone locking plan), and combine time management tools (such as Forest focus APP) to quantify the length of mobile phone use, and gradually reduce the dependence on instant satisfaction.

Introducing psychological workshops, designing cognitive behavioral therapy (CBT) for hidden narcissistic tendencies and social anxiety groups, restoring virtual social scenes through role-playing, revealing the compensatory psychological mechanism of over-reliance on mobile phones, and guiding students to face up to the value of real interpersonal interaction.

Build a peer-to-peer network

Set up a student autonomy group for a"no mobile phone classroom", implement the "deskmate supervision points system", and incorporate classroom concentration into comprehensive quality evaluation, thus forming positive pressure on the group. For example, the frequency of bowing is recorded through the anonymous punching system, and the data is regularly publicized and rewarded with a concentration pacesetter.

Cultivate goal-driven learning habits

Popularize the "task list-visualization of results" mode, requiring students to set knowledge acquisition goals before class, re-record classroom content in the form of a mind map after class, and bind the use of mobile phones with learning goals (such as only consulting relevant materials of the course) to break the inertia of entertainment use.

The dimension of teachers: to "guide" to promote teaching reform, to reshape the attractiveness of the classroom

Teaching paradigm transformation: from indoctrination to co-creation

The teaching method of "question chain+instant feedback" is designed, and in-class questions and answers are inserted every 15 minutes by using tools such as Rain Classroom and Mentimeter. Students need to submit their answers through their mobile phones and participate in real-time ranking, to turn the equipment into a learning tool. For example, law classes can set up virtual court debates, assign roles and submit arguments through WeChat applets, and force them to participate in deep thinking.

Reconstruction of evaluation system and dynamic intervention

Introduce process evaluation index (Biggs, 2011), the frequency of classroom interaction, the quality of questions, etc. will be included in the performance assessment, accounting for not less than 30%. For high-frequency students who bow their heads, the graded early warning mechanism is started: the first early warning triggers one-on-one interviews, the second early warning links

psychological counseling, and the third early warning starts the home-school collaborative intervention program.

The dimension of the classroom environment: promoting ecological optimization by "supervising" and creating a field without interference.

Technical control and space design

Pilot the "intelligent signal conditioning system" to automatically reduce the Wi-Fi bandwidth in specific areas of the classroom (such as the back row) during the teaching period, giving priority to ensuring the fluency of the teaching interactive platform. At the same time, it is equipped with a "mobile phone storage wall", so that students can accumulate credit points, points related to the priority of course selection, and other rights after swiping their cards into the equipment before class.

Institutional constraints and cultural infiltration go hand in hand

Formulate the "Classroom Digital Etiquette Standard" and clarify the rules of "three zones and two time periods": the core teaching area (front row) is forbidden to expose mobile phones, the collaborative learning area (middle row) is open to group discussion and verification within a limited time, and the self-study area (back row) is set with silent use rights; The first 20 minutes and the last 10 minutes of the course are compulsory equipment-free periods. At the same time, we will launch the campus action of "Declaration of Looking Up" and reshape the cognition of classroom sacredness through teacher demonstrations, interviews with alumni, and documentaries.

Home-school cooperative governance network construction

Build a family digital education support platform, push the Guide to Home Mobile Phone Use, and guide parents to establish "learning mode" home network rules (such as automatically blocking entertainment applications from 19: 00 to 21: 00). The joint community launched the "No Mobile Phone Day" activity, and the classroom concentration behavior was included in the social practice credits, forming a positive feedback loop of public opinion.

References

World Bank. (2023). Global Higher Education Technology Penetration Report. Washington, *DC: World Bank Publications.*

Ministry of Education of the People's Republic of China (PRC). (2022). Special Report on Monitoring Undergraduate Classroom Teaching Quality. *Beijing: Department of Higher Education, Ministry of Education.*

Ophir, E., Nass, C., & Wagner, A. D. (2009). Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences, 106(37), 15583-15587.*

Clark, R. C., & Mayer, R. E. (2011). E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning. *John Wiley & Sons.*

Kuznekoff, J. H., & Titsworth, S. (2013). The impact of mobile phone usage on student learning. *Communication Education, 62(3), 233–252.*

Lepp, A., Barkley, J. E., & Karpinski, A. C. (2014). The relationship between cell phone use, academic performance, anxiety, and satisfaction with life in college students. *Computers in Human Behavior, 31, 343–350.*

McCoy, B. (2016). Digital distractions in the classroom: Student classroom use of digital devices for non-class related purposes. *Journal of Media Education, 7(1), 5–14.*

Panova, T., & Carbonell, X. (2018). Is smartphone addiction an addiction? *Journal of Behavioral Addictions, 7(2), 252–259.*

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior, 29(4), 1841–1848.*

Rosen, L. D., Whaling, K., Rab, S., Carrier, L. M., & Cheever, N. A. (2013). Is Facebook creating "iDisorders"? The link between clinical symptoms of psychiatric disorders and technology use, attitudes, and anxiety. *Computers in Human Behavior, 29(3), 1243–1254.*

Wink, P. (1991). Two faces of narcissism. *Journal of Personality and Social Psychology, 61(4), 590–597.*

Ball-Rokeach, S. J., & DeFleur, M. L. (1976). A dependency model of mass-media effects. *Communication Research, 3(1), 3–21.*

Elhai, J. D., Dvorak, R. D., Levine, J. C., & Hall, B. J. (2017). Problematic smartphone use: A conceptual overview and systematic review of relations with anxiety and depression psychopathology. *Journal of Affective Disorders, 207, 251–259.*

Taneja, A., Fiore, V., & Fischer, B. (2020). Cyber-slacking in the classroom: Exploring laptop and smartphone use in college lectures. *Computers & Education, 145, 103731.*

Kraushaar, J. M., & Novak, D. C. (2010). Examining the effects of student multitasking with laptops during the lecture. *Journal of Information Systems Education, 21(2), 241–251.*

Liu, H., Lin, C., & Zhang, D. (2020). Cultural differences in smartphone use in the classroom: A comparative study between China and the U.S. *Educational Psychology, 40(6), 693–712.*

Aagaard, J. (2015). Drawn to distraction: A qualitative study of off-task use of educational technology. *Computers & Education, 87, 90–97.*

Bradbury, N. A. (2016). Attention span during lectures: 8 seconds, 10 minutes, or more? *Advances in Physiology Education, 40(4), 509-513.*

Biggs, J., & Tang, C. (2011). Teaching for quality learning at university. *McGraw-Hill Education.*