Nanotechnology Perceptions
ISSN 1660-6795
www.nano-ntp.com

Teacher-Student Interaction, Learning Motivation And Classroom Participation In Private Colleges In China

Zhiyuan Yang[1] , Connie Shin @ Connie Cassy Ompok[2]*

[1]Universiti Malaysia Sabah, Malaysia & HENGXING college, Email id: yangzhiyuan88@hotmail.com
[2] Universiti Malaysia Sabah, Malaysia, Email id: connieompok@ums.edu.my
Correspondence author: connieompok@ums.edu.my

This study investigated the relationship between teacher-student interaction, learning motivation and classroom participation at a private undergraduate college. A sample of 300 students was selected through random sampling among undergraduate students majoring in English at a private undergraduate college in Shandong. The instrument used for the study was a combined questionnaire adapted from the Teacher-Student Relationship, Learning Motivation and Classroom Participation. Descriptive and inferential statistics were used to describe the findings of the study. The result showed a significant relationship between teacher-student interaction and classroom participation. Teacher-student interaction draws students into the process of learning and promotes their desire to learn. The result also showed a significant relationship between learning motivation and classroom participation. Teachers make efforts to enhance students' learning motivation by creating a positive learning environment and designing a more engaging and interactive classroom atmosphere.

Keywords: Teacher-Student Interaction, Learning Motivation, Classroom Participation, Private Colleges, Undergraduate Students

1.0 Introduction

Higher education is one of the undeniably important institutions in society development in any country (Jafari and Asgari, 2020). Since the reform and opening up of the country, China's higher education system has achieved remarkable development results. Especially in 2019, the gross enrollment rate of higher education was 51.6%, marking China's higher education transition from the initial stage to a deeper and more mature stage of massification. To further enhance the quality and foster the connotative development of higher education, the 19th CPC National Congress report put forward the strategic goal of building first-class universities and colleges, and first-class disciplines, which aimed to accelerate the pace of connotative development of higher education and improve the overall quality of education and international competitiveness.

The focus on internal college development has led scholars to emphasize assessing the quality and level of teaching at the college. The notion of students' participation has been established in the practice of undergraduate education quality evaluation, and relevant surveys have been devised to measure students' learning and living experiences at college (Kuh, 2001).

Classroom participation is recognized as an essential factor that influences educational outcomes in higher education. It helps universities and colleges to easily identify students' learning quality and understand the processes and mechanisms that lead to effective student learning, thereby facilitating corresponding improvements in educational services and the academic environment (Pascarella and Terenzini, 2005). Classroom participation has gradually become a new standard and an essential basis for measuring the quality of higher education. As a vehicle for teachers and students to interact with each other with the primary purpose of knowledge transfer, the classroom plays a crucial role in higher education (Pascarella and Terenzini, 2005). Therefore, teacher-student interaction and learning motivation are essential parts of classroom teaching and are considered important factors influencing classroom participation.

Teacher-student interaction is a basic and universal form of participation in the educational process, which is crucial to achieving educational goals and promoting the healthy development of personality. From a sociological point of view, interaction is intricately linked to roles. Lyu (2004) delved into teacher-student interaction through role analysis, arguing that interaction embodies the dynamics of roles and each role is defined through these interactions.

On the one hand, teacher-student interaction within higher education is of vital importance in classroom participation. According to Karamane et al. (2023), teachers play an important role in facilitating classroom participation and teachers' behaviors and attitudes are crucial in influencing classroom participation. Some studies have pointed out the interaction between teachers and students is a powerful force that can significantly influence students' cognitive and emotional development (Corbin et al., 2020; Lepinoy et al., 2023). Research on classroom participation in domestic universities and colleges and the role of teacher-student interaction in classroom participation has been corroborated by empirical studies. Zhu (2007) found that student interaction with professional teachers can directly increase classroom participation in numerous ways, including classroom learning, after-school learning, interprofessional learning, and extracurricular activities, which indirectly enhance student development.

On the other hand, motivation plays a key role in all human activities. As the core driving force of all human behaviors, motivation is the compass for achieving goals. Motivation consists of self-efficacy, source of motivation and goal orientation, and emotional response motivation. Self-efficacy refers to a sense of confidence in accomplishing a particular behavior, which gives people the inner strength to do everything. The source of motivation and goal orientation is related to the reason to act, it pertains to what kind of goal a person wants to pursue, which gives people the external driving force to act. Emotional response motivation affects the strength and durability of motivation and influences whether a mission can be accomplished or not. In the college context, learning motivation is seen as a key factor in students' academic achievement. Therefore, a deep study of the influencing factors for classroom participation and its mechanism of action is crucial to understanding students' learning behavior and improving the quality of education.

Learning motivation signifies the level of interest and concentration in engaging in educational endeavors. According to Nayır (2017), the levels of learning motivation are interconnected with classroom participation, necessitating educators and school administrators to adopt supplementary motivational tactics for their students. Jeong's (2019) research underscored the importance of learning motivation for classroom participation in the realm of English language learning. High levels of learning motivation are generally associated with favorable classroom participation and enhanced academic achievement.

Sun (2019) employed quantitative research techniques grounded in self-determination theory to investigate how learning motivation influenced classroom participation among undergraduate students majoring in computer science at Anhui Agricultural College. The research findings indicated that students possessing autonomous motivation were more inclined to experience fulfillment in their fundamental psychological needs, possessed a stronger sense of learning self-efficacy, demonstrated a high level of participation in classroom activities, and attained outstanding academic performance.

To sum up, although there have been numerous studies on teacher-student interaction and learning motivation, these studies have primarily focused on Western countries. In China, there is relatively limited research that pays attention to teacher-student interaction, learning motivation and classroom participation, especially in the context of private college classroom environments.

Problem Statement

According to Yang et al. (2022), over 60% of college students lack positive classroom participation actions. In addition, studies indicate that hidden truancy is widespread across various colleges and universities. Liu et al. (2023) revealed that 97.5% of surveyed students had experienced hidden truancy, varying across grades and course types. The mantra "compulsory escape from elective courses, optional escape from compulsory courses" has become prevalent among students, particularly senior students. Hidden truancy highlights problems with classroom participation.

Due to a deep respect and reverence for their teachers, students tend to hesitate when it comes to engaging in face-to-face communication with them (Du, 2021). Teachers' lectures, though delivered with rigour and dedication, suffer from a lack of interaction with students, consequently diminishing students' motivation to participate actively in class (Liu and Zou, 2009; Lin, 2007). Yu et al., (2017) found that both external and internal motivation directly and positively impact student behavior, cognition and emotional participation.

Private colleges and universities constitute an important component of higher education. The construction of national high-level private colleges and universities aims to guide and promote the high-quality development of private colleges and universities in China, thereby contributing to the building of a powerful country in higher education (Hong, 2024). However, classroom participation is a new benchmark and a significant basis for evaluating the quality of higher education. Shu & Zhang (2023) concluded that the level of classroom participation of students in private institutions is generally lower than that of public universities. Therefore, we need to focus on classroom participation in private colleges and universities, understand the influencing factors of classroom participation in such institutions, and explore the impact of teacher-student interaction and

learning motivation on classroom participation in private college classrooms. This will provide a basis for enhancing classroom participation in private colleges and universities, promote the achievement of high-quality development in China's private colleges and universities, and contribute to the construction of a powerful country in higher education.

Objectives of the Study

a. To examine the relationship between Teacher-Student Interaction and Classroom Participation.

b. To examine the relationship between Learning Motivation and Classroom Participation.

Questions of the study

a. Is there a significant relationship between teacher-student interaction and classroom participation?

b. Is there a significant relationship between learning motivation and classroom participation?

Hypotheses of the Study

Hypothesis 1: There is a significant relationship between teacher-student interaction and classroom participation.

Hypothesis 2: There is a significant relationship between learning motivation and classroom participation.

.

2.0 Method and sampling

The objectives of the study are i) to examine the relationship between teacher-student interaction and classroom participation in private undergraduate colleges in China and ii) to examine the relationship between learning motivation and classroom participation in private undergraduate colleges in China.

In the domain of English language education, Qingdao Hengxing College, a renowned private undergraduate institution, has distinguished itself by achieving remarkable success. It has been proven by its numerous accolades in national English competitions. This achievement highlights the college's dedication to providing superior educational instruction. The English major, specifically, boasts a comprehensive curriculum that integrates professional foreign languages, Chinese language studies, artistic literacy and ideological and political education, which fosters students' holistic development. Therefore, this program serves as a representative model of the general state of English language teaching in private undergraduate colleges all over China.

The current study adopts a strategic sample comprising 476 students enrolled in the English major at Qingdao Hengxing College during the academic year 2023-2024. To ensure representation, a rigorous random sampling technique was employed. After sampling, 300 completed responses were obtained, resulting in a response rate of 63%, which is considered satisfactory for this research. The influencing factors of classroom engagement, encompassing teacher-student interaction and learning motivation, exhibit strong reliability and validity (Yang et al., 2024).

Teacher-Student Interaction

Fisher et al., (1995) used the Teacher-Student Relationship Questionnaire to measure teaching and learning interaction. It consists of eight dimensions and 48 question items, which were rated using a 5-point force scale. Since its introduction, many academics have utilized the Teacher Interaction Questionnaire (TIQ), and it has been validated in various educational settings in the Netherlands, the United States, and Australia (Fisher et al., 1995). Its usage in various cultural and contextual environments has consistently demonstrated its ability to provide valid, reliable, and insightful data on learning environments in general and teacher interaction in particular. Three dimensions were selected in this study, and Cronbach's alpha also validated their reliability. The Cronbach's alpha value for leadership was 0.85; helping/friendly was 0.83; understanding was 0.84; and student responsibility/freedom had a Cronbach's alpha value of 0.80.

Learning Motivation

The Motivational Strategies for Learning Questionnaire (MSLQ) (Pintrich,1991) was used to measure learning motivation. The MSLQ consists of two parts: the section on motivation and the section on strategies for learning. The section on motivation consists of 31 items assessing the aims and values of the students, including skills for success on the course, course exam anxiety, beliefs about themselves, and interest in learning (Pintrich,1991). Students' responses were rated on a 5-point Likert scale from "not at all in my situation" to "very much in my situation." The Cronbach's alpha values for the MSLQ ranged from 0.52 to 0.93, indicating that the questionnaire has reasonable factorial validity and is reliable in assessing students' motivation to learn (Pintrich, 1991). Three dimensions of the motivation scale were included in this study, and Cronbach's alpha verified the reliability of the three dimensions. The Cronbach's alpha value for Goal Orientation was 0.88; the Cronbach's alpha value for Task Value was 0.86; and the Cronbach's alpha value for Control of Learning Beliefs was 0.87.

Classroom Participation

The classroom participation Questionnaire (Handelsman et al., 2005) was used in this study. The questionnaire is made up of 23 items with a 5-Likert scale. It comprises four parts: skill participation comprising nine items, alpha=0.82; affective participation encompassing five items, alpha=0.82; interactive participation consisting of six items, alpha=0.79; and performance participation with three items, alpha= 0.76 (Elçi et al., 2007). The three dimensions of the scale were chosen for this study. Cronbach's alpha verified the reliability of the dimensions. The Cronbach's alpha value was 0.85 for skill participation, 0.83 for affective participation, and 0.78 for interactive participation.

Data Analyzing

Regression analysis was used primarily for the purpose of prediction. The author has developed a regression model to predict the values of dependent or response variables based on the values of one explanatory or independent variable. Regression analysis was used when independent variables were correlated with one another and with dependent variables. In this study, there are two types of regression analysis that were employed.

The first regression analysis is Simple Linear Regression which is a statistical technique that uses a single numerical. The independent variables X (teacher-student interaction, learning motivation) predict the numerical dependent variable Y (classroom

participation). Statistical Package for Social Science (SPPS) software was used in this study to obtain the parameter estimates, the standard errors, the F-statistics, the coefficient of determination (R^2) and p-values (Sig. F Change). The t-test and F-test were conducted to determine the statistical significance of the individual parameter and the equation. The coefficient of determination, R^2 measures the proportion of variation in Y that is explained by the independent variables X in the regression model. The F-test which provides a measure of the ratio of explained variation in the dependent variable to unexplained variation was conducted to test the statistically significant. In conducting the F test, if the value for the calculated F-statistics exceeds the critical F-value, the regression equation is statistic gives the exact level of confidence associated with the computed F-statistic. In regression analysis, the coefficient of determination, the standard error, the t-ratio, R^2, F-statistic and the p-value are required to be calculated. Regression software using SPSS is used for that calculation.

Durbin-Watson statistic is also important in determining the correlation. The Durbin-Watson statistic determines that when the value is less than 2, it is concluded that there is a significant positive autocorrelation. When the Durbin-Watson value approaches 0, it indicates that the residuals are positively correlated. If the residuals are not correlated, the value of Durbin-Watson will be close to 2. When the Durbin-Watson is greater than 2 (ranging from 2 to 4), it indicates that there is a significant negative autocorrelation. In statistics, the Durbin-Watson shown in computer output was also used in explaining the statistical analysis in this study. The standardized beta coefficient is used to compare coefficients as to their relative explanatory power of the dependent variables.

3.0 Findings

A total of 300 completed responses were obtained. Overall, the total response rate was 63%.

Hypotheses 1: There is a significant relationship between teacher-student interaction and classroom participation.
Teacher-student interaction is entered into a simple linear regression model with classroom participation as the dependent variable. From the study, showed that there is a significant correlation between teacher-student interaction and classroom participation at 5% significance, F=96.231 distribution showing the existence of a model. The result of this relationship is presented in Table 4.1 dan Table 4.2.

Table 4.1 Statistical summary for the regression between teacher-student interaction and classroom participation.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			Durbin-Watson
					R Square Change	F Change	Sig. F Change	
	0.659	0.435	0.426	0.544	0.435	50.773	<0.001	1.659

Table 4.2 Coefficients table for teacher-student interaction and classroom participation.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
	1.984	0.367		3.250	0.002
TS	0.684	0.096	0.659	7.126	<0.001

The result of the simple linear regression analysis in Tables 4.1 and 4.2 showed that at F=50.773 and p <0.001 (less than 0.05) teacher-student interaction (independent variable) significantly related to classroom participation. While t= 7.126, and p<0.001 (less than 0.05), indicated that teacher-student interaction significantly determines classroom participation. Durbin-Watson value of 1.659 indicates that teacher-student interaction was significant in classroom participation. The coefficient of determination R^2 for this model is 0.435indicating that 43.5% of the variation in classroom participation (dependent variable) is explained by the teacher-student interaction (independent variable). In other words, teacher-student interaction predicts a significant percentage of classroom participation. Meaning, that 43.5% of the variation in classroom participation could be determined by other factors besides teacher-student interaction.

From Table 4.2, the constant (Y-intercept), $\beta 0$ = 1.984 and $\beta 1$ = 0.684, so the linear equation can be written as follows,

Y = 1.984 + 0.684X,

Where:

Y = Classroom participation (dependent variable)

X = Teacher-student interaction (independent variable)

Y-intercept, $\beta 0$ =1.984

Slope, $\beta 1$ =0.684

The Y-intercept, $\beta 0$ =1.984 indicated that when the percentage of teacher-student interaction is at 0, the expected change in classroom participation is 1.984%. The β_1 =0.684 indicates that for each 1% increase in teacher-student interaction, it is predicted an increase of +0.684% in classroom participation. From this equation, it is concluded that there is a significant positive linear relationship between teacher-student interaction and Classroom participation. Therefore, hypothesis 1 is accepted.

Hypothesis 2: There is a significant relationship between learning motivation and classroom participation.

The Independent variable, learning motivation is entered into a simple linear regression model on classroom participation as the dependent variable. At a 5% significant level, the F=63.226 distribution shows the existence of a model. The result of this relationship is presented in Table 4.3 dan Table 4.4.

Table 4.3 Statistical summary for the regression between learning motivation and classroom participation.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			Durbin-Watson
					R Square Change	F Change	Sig. F Change	
	0.699	0.489	0.482	0.51758	0.489	63.226	<0.001	1.637

Table 4.4 Coefficients table for learning motivation and classroom participation.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
	1.605	0.279		5.756	<0.001
LM	0.454	0.057	0.699	7.951	<0.001

The result of the simple linear regression analysis showed in Table 4.3 and 4.4 that F=63.226 and p <0.001 (less than 0.05), indicated that learning motivation (independent variable) contributes a significant effect on classroom participation. While t= 7.951, and p <0.001 (less than 0.05), indicated that learning motivation significantly determines classroom participation. With a Durbin-Watson value of 1.637, the correlation between these two variables (learning motivation and classroom participation) was significant. The coefficient of determination R^2 for this model is 0.489 indicating that 48.9% of the variation in classroom participation (dependent variable) was explained by the learning motivation (independent variable).

From Table 4.4, the constant (Y-intercept), $\beta 0 = 1.605$ and $\beta 1 = 0.454$; so the linear equation can be written as follows,

$Y = 1.605 + 0.454X$,

Where:

Y = Classroom participation (dependent variable)

X = Learning motivation (independent variable)

Y-intercept, $\beta 0 = 1.605$

Slope, $\beta 1 = 0.454$

The Y-intercept, $\beta 0 = 1.605$ indicates that when the learning motivation is at 0, the expected change in classroom participation was 1.605%. The $\beta 1 = 0.454$ indicated that for each 1% increase in learning motivation. It was predicted an increase of +0.454% on classroom participation. From this equation, it is concluded that there was a significant positive linear relationship between Learning motivation and classroom participation. Therefore, hypothesis 2 is accepted.

4.0 Discussion and Conclusion

Classroom participation indicates various factors and variables are associated with the educational goals of high-quality internal development. As a vehicle for teachers and students to engage in mutual communication, the classroom is the main element of higher education, which helps them recognize the benefits of students' classroom participation. In addition, Jafari and Asgari (2020) suggested that as pivotal figures within the higher education landscape, college professors bear the paramount responsibility of fostering the advancement of education that is both high-calibre and enriched with substance. Their position is indispensable and paramount in accomplishing the college's overarching mission. Given their central position in the educational process, it is particularly necessary to analyze teachers' classroom performance and their ability to interact with students. Especially in the micro-environment of the classroom, the dynamic interaction between teachers and students not only influences students' academic development but also is key to shaping their motivation and learning habits (Jafari and Asgari, 2020).

Among the many factors affecting classroom participation and quality of learning, the stimulation and maintenance of learning motivation is of vital importance. As an intrinsic driving force of learning behaviors, learning motivation can significantly enhance classroom participation. Therefore, exploring how learning motivation affects classroom participation is not only of theoretical value but also significance for educational practice.

Therefore, this study formulated hypotheses regarding the influence relationships among teacher-student interaction, learning motivation and classroom participation. By testing these hypotheses, we expect to gain a deeper understanding of the influence mechanism of teacher-student interaction on classroom participation and to provide empirical evidence and theoretical support for improving the quality of higher education.

Student interaction with professional teachers can directly increase classroom participation in numerous ways (Zhu, 2007). The results of this study align with those of independent research conducted by Karamane et al. (2023) and Zhu (2007), which found that teacher-student interaction has a significant influence on classroom participation. The findings of this study can guide future researchers.

According to Nayır (2017), the levels of learning motivation are interconnected with classroom participation. The finding of this study also suggests that learning motivation affects classroom participation directly and significantly. Learning motivation is a key factor in promoting learning interest. Highly motivated students show more positive and active behavior in learning. They also take the initiative to cooperate with teachers in the classroom, to interact and participate in group discussions. As they possess strong autonomy and self-discipline, they set learning goals, self-monitor their learning progress, and adjust their learning strategies to achieve the best results. Self-discipline makes it easy for them to achieve in their studies and gain a sense of accomplishment. Positive feedback from teachers further enhances their learning motivation and classroom participation, thus creating a virtuous circle.

Through a study of the English major at Qingdao Hengxing College of Science and Technology, we have uncovered the intricate and significant interrelationships among teacher-student interaction, learning motivation and classroom participation. These findings not only enrich the understanding of the dynamics of English language teaching in higher education but also offer invaluable insights and transferable experiences for other private undergraduate institutions and the broader undergraduate education sector. Specifically, these research outcomes can guide other colleges to adopt more effective strategies to enhance teaching quality, bolster students' learning motivation and foster classroom interaction, thereby optimizing the learning environment and facilitating students' holistic development. Therefore, this study holds significant theoretical and practical value, providing a robust reference for relevant educational policymakers and teaching practitioners. In addition, based on the findings of this study, it is recommended that teachers make efforts to enhance students' learning motivation. This can be achieved, for example, by creating a positive learning environment and designing a more engaging and interactive classroom atmosphere. Teachers should also be flexible in adjusting their teaching strategies and avoiding teaching methods that are too intense or not adapted to students' needs to enhance classroom participation and learning outcomes.

This study has some methodological limitations, mainly centered on the measurement tool used. As for the questionnaire, it provides an avenue for data collection, but inevitably carries some inherent limitations, such as measurement error, respondent non-cooperation, a tendency towards socially desirable responses, and accuracy on the part of some students in completing the questionnaire. Other methods, such as interviews, should also be considered in future studies to overcome these limitations.

References

1. Corbin, C. M., Downer, J. T., Ruzek, E. A., Lowenstein, A. E., and Brown, J. L. (2020). Correlates of change in elementary students' perceptions of interaction with their teacher. Journal of Applied Developmental Psychology, 3.
2. Du, X. F. (2021). An investigation of student participation in high school English classrooms and corresponding strategies [Dissertation]. Shanxi Normal University.
3. Elçi, M., Ki˙tapçi, H., and Ertürk, A. (2007). Effects of Quality Culture and Corporate Ethical Values on Employee Work Attitudes and Job Performance in Turkey: An Integrative Approach. Total Quality Management and Business Excellence.
4. Fisher, D., Fraser, B., and Cresswell, J. (1995). Using the " Questionnaire on Teacher Interaction" in the Professional Development of Teachers. Australian Journal of Teacher Education, 20(1), 2.
5. Handelsman, M. M., Briggs, W. L., Sullivan, N., and Towler, A. (2005). A measure of college student course participation. the Journal of Educational Research, 98(3), 184-192.
6. Interpersonal relationships in education (pp. 56-63). London: Falmer Press.
7. HONG Yimin. (2024). Direction and Requirements for Developing the Construction Standards of National High-level Non-governmental Institutions of Higher Learning in the New Era. Journal of Zhejiang Shuren University (01), 19-25.
8. Jafari, S., and Asgari, A. (2020). Predicting Students' Academic Achievement Based on the Classroom Climate, Mediating Role of Teacher-Studentinteraction and Academic Motivation. Integration of Education, 7.
9. Jeong, K. O. (2019). Online collaborative language learning for enhancing learner motivation and classroom participation. International Journal of Contents, 15(4), 89-96.

10. Kuh, G. D. (2001). Assessing what really matters to student learning inside the national survey of student participation. Change: The magazine of higher learning, 33(3), 10-17.
11. Karamane, E., Vatou, A., Tsigilis, N., & Gregoriadis, A. (2023). Comparing students' and teachers' perceptions about teachers' interpersonal behaviour in Greek secondary education. Learning Environments Research, 26(3), 899-914.
12. Lepinoy, A., Vanderlinde, R., & Lo Bue, S. (2023, November). Emergency remote teaching, students' motivation and satisfaction of their basic psychological needs in higher education. In Frontiers in Education (Vol. 8, p. 1187251). Frontiers Media SA.
13. Lin, Xiong. (2007). Discussion on some issues of online rural teacher training. Fujian Forum: Humanities and Social Sciences Edition, (S1), 108-109.
14. Liu, Wenjuan, Fei-Fei Chia, & Xiao-Juan Cheng. (2023). A study on the mechanism of college students' boredom tendency on classroom participation. Advances in Education, 13, 655.
15. Liu, Y., & Zou, X.. (2009). Construction of a WEB2.0-based teacher-student interaction platform. Journal of Yibin College, 9(12), 58-61.
16. Lyu, G. G. (2004). A study on teachers' beliefs and their influencing factors (Doctoral dissertation, Northwest Normal University). Retrieved from https://kns.cnki.net/kcms2/article/abstract?v=IylmbgxpP4SWkVoXok4cl9P0wmLPVRbBNcHqalInA4cbUExFSQUlode0_e5YqCnesj5JoT46sAhVmdXQ9aHQ0mnkp6t_-wQn7TiKeYWU1_PmyQF7A0pGNpQvVRM2l1_BZC0LTyjO1EABn7hnnYuEzKE2f2UKTRFSqcSwx_PyybYKbws2OiHy3LAs4BNl4BX2&uniplatform=NZKPT
17. Nayır, F. (2017). The relationship between student motivation and class participation levels. Eurasian Journal of Educational Research, 17(71), 59-78.
18. Pascarella, E. T., and Terenzini, P. T. (2005). How College Affects Students: A Third Decade of Research. Volume 2. Jossey-Bass, An Imprint of Wiley. 10475 Crosspoint Blvd, Indianapolis, IN 46256.
19. Pintrich, P. R. (1991). A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ).
20. Sun Tao. (2019). A study of motivation of undergraduate computer science students in agricultural colleges and universities M.S. (Dissertation, Anhui Agricultural College). Master https://link.cnki.net/doi/10.26919/d.cnki.gannu.2019.000717 doi:10.26919/d.cnki.gannu.2019.000717.
21. Shu, Pearl, & Zhang, Tong. (2023). The impact of talent structure on academic output in private universities. Advances in Education, 13, 6632.
22. Yang, S. D. (2022). Comparative study on the characteristics of undergraduate education service demand: public and private colleges and universities. Heilongjiang Higher Education Research, (11),38-44.
23. doi:10.19903/j.cnki.cn23- 1074/g.2022.11.014.
24. Yang, Z., Shin, C., Ting., P.D. & Sharif, S. (2024). A Pilot Investigation Validating the Antecedents Measured by the Classroom Engagement Instrument in Chinese Educational Settings. Journal of Computational Analysis and Applications (JoCAAA), *33* (07), 59–68. Retrieved from https://eudoxuspress.com/index.php/pub/article/view/1002
25. Yu, Q., Liu, J. L., & Zhao, Y. (2017). A study on the mechanism of teachers' support influencing students' learning motivation and academic achievement. Journal of Tianjin University (Social Sciences), 19(06), 542-547.
26. Zhu, H. (2007). University student participation and its impact mechanism on growth: An analysis of data from the development of university students in Beijing in 2010. Educational Research, (10).