Comparative Analysis of Student-Centered Teaching Mode In Selected Colleges and Universities In China

Xie Chun [1] ,   Mariano Thomas Ramirez[2]

[1] Guangxi University of Chinese Medicine,Nanning, 530023；
[2] DE LA SALLE UNIVERSITY -Dasmarinas,Dasmarinas Cavite 4115 Pillippines
Email: 54127305@qq.com

Abstract: At present, there are significant differences in the implementation and practice of student-centered teaching models among different universities in China, resulting in different teaching outcomes. This provides certain innovative space for the development of this research activity. This study mainly adopts a combination of quantitative and qualitative research methods to compare the practical effects of the student-centered teaching model in five selected universities. It is found that all five universities have commendable aspects in implementing the student-centered teaching model, and there are also many areas that can be improved and perfected. Researchers not only raised common issues and challenges, but also proposed the best practice model and provided suggestions.

Keywords: Comparative analysis,student centered teaching mode,selected colleges

Introduction

In the 21st century, China's university expansion has led to a focus on improving educational quality. There's an urgent need to reform teaching methods, adopting student-centered approaches, and learning from Western experiences to move away from rote learning. Educators are promoting these changes, achieving some success, but the implementation is still in its early stages with room for improvement in teaching model design and hardware investment. The value of online tools is increasing as an integrated education system develops. However, theoretical support and model construction are lacking.

Differences in implementing student-centered models across universities result in varying outcomes, offering research opportunities. This study analyzed several universities' practices, strategies, and common issues under this model, proposing optimization suggestions. The Input-Process-Output model served as the framework, considering variables for both teachers and students, such as platform selection, resource construction, and personality development. A comparative analysis was conducted using a custom questionnaire and analysis methods, leading to a proposed universal application framework for student-centered teaching models.

Figure 1 A Conceptual Paradigm for Comparative analysis of Student Centered Teaching Models in Selected Universities in China
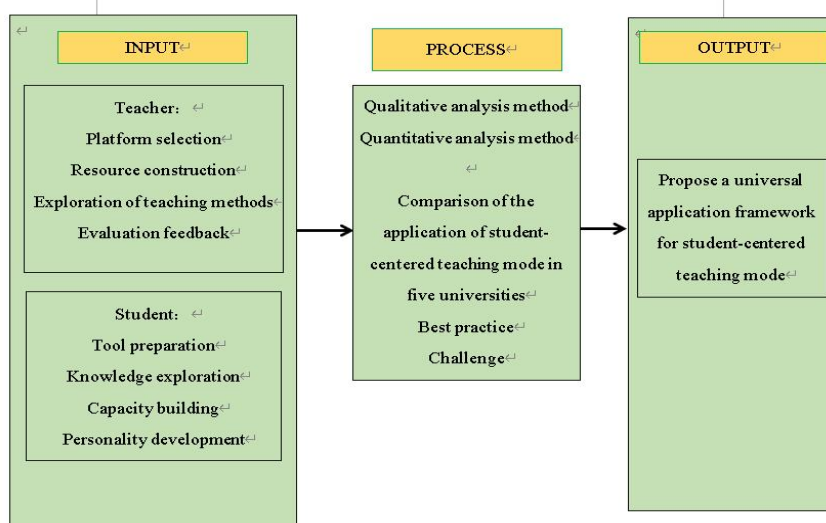
Methods

This study adopted a multi-stage sampling method. Randomly select five universities based on their disciplinary categories as the population for this study. Each university adopts a simple random sampling method, randomly selecting a total of 400 college students as the research subjects. In addition, a purposive stratified random sampling method was used to interview five administrative personnel from five universities with different departments, genders, ages, positions, and years of service. The interviewees come from five departments: Admissions and Employment Office, Student Affairs Office, Human Resources Office, Academic Affairs Office, and Graduate School. We also interviewed five teachers from five universities, who have different genders, ages, professional titles, work experience, and disciplines.

Instrument
Survey questionnaire

The survey questionnaire for these 41 projects was developed by researchers based on the research direction and identified questions. The scoring criteria for the questionnaire are 1 to 5 points, and descriptive equivalence is assigned.

Interview Guide

School administrators and teachers are divided into two groups for investigation and interviews. Each group of interviewees will receive targeted interview guidelines based on their job responsibilities and roles in the process. Interview each interviewee once, for approximately 30-60 minutes each time.

Results and Discussion
A）Teachers
Table 1 Comparative mode of student-centered teaching in terms of Platform selection

Items	UA	UB	UC	UD	UE	Total Mean	SD	VI
platform selection	2.35	2.04	2.01	2.15	2.45	2.2	0.83	SA
Total						2.20	0.83	SA

Platform selection depends on the usage of teaching platforms, including offline platforms, online platforms, and blended online and offline platforms, by teachers when implementing a student-centered learning mode. Therefore, as shown in the presented table, the overall average value of platform selection is 2.2. Teachers from five universities all agree slightly with this question, with University E scoring the highest at 2.45 points and University C the lowest at 2.01 points. This means that the five universities did not have a good choice of various platforms in the student-centered teaching mode. However, among the five universities, University E has made good choices in using various platforms.

Table 2 Comparative mode of student-centered teaching in terms of Resource construction

Items	UA	UB	UC	UD	UE	Total Mean	SD	Rank	VI
1.Video images	2.09	2.56	2.13	2.09	2.34	2.24	0.81	4	S A
2.Network connections	2.14	2.47	2.07	2.67	2.09	2.29	0.82	3	S A
3.Courseware case studies	2.67	2.35	2.09	2.19	2.19	2.30	0.75	2	S A
4.Test exercises	2.34	3.01	2.19	2.18	2.27	2.40	0.72	1	S A
Total						**2.30**	**0.78**		**S A**

The construction of teaching resources mainly refers to the collection of teaching content by teachers, which can be reflected in the form of audio, video images, network connections, courseware cases, test exercises. The table shows that in this mode, the use of test exercises (2.40) is the most commonly used method among the five universities. However, the overall average of the five universities is 2.30, indicating a relatively consistent belief that resource development is slightly utilized in student-centered teaching modes.

Table 3 Comparative mode of student-centered teaching in terms of exploration of teaching methods

Items	UA	UB	UC	UD	UE	Total Mean	SD	Rank	VI
1. Cooperative learning	3.09	2.17	2.22	2.23	1.89	1.87	0.76	4	S A
2. Service learning	2.08	2.98	3.12	2.40	1.90	2.50	0.74	1	S A
3. Exploratory learning	2.17	2.67	3.09	2.31	1.68	2.38	0.78	3	S A
4. Project-based learning	2.26	3.20	2.76	2.35	1.68	2.45	0.78	2	S A
Total						**2.30**	**0.76**		**S A**

The exploration of teaching methods specifically refers to the strategies and means adopted by teachers in the teaching process, such as cooperative learning, service learning, exploratory learning, project-based learning etc. As shown in the table, the five universities have relatively less agreement on the usefulness of cooperative learning. However, the overall average of the five universities is 2.30, which is explained by their slightly consistent teaching methods.

Table 4Comparative mode of student-centered teaching in terms of evaluation feedback

Items	UA	UB	UC	UD	UE	Total Mean	SD	Rank	VI
1. Incentive mechanisms	1.99	3.11	2.65	2.46	1.95	2.43	0.84	1	S A
2. Interactive design	1.78	1.89	2.19	2.67	2.08	2.12	0.77	3	S A
3. Evaluation system	1.89	1.90	2.14	2.18	2.36	2.10	0.83	4	S A
4. Feedback improvement	2.05	2.07	2.19	2.22	2.40	2.19	0.85	2	S A
Total						**2.21**	**0.82**		**S A**

Evaluation feedback refers to the evaluation of students' stage learning by teachers, and the adjustment of teaching methods based on the evaluation content. For example, incentive mechanisms, interaction design, evaluation systems, feedback improvements, etc. The table shows that in this mode, the use of incentive mechanisms (2.43) is the most commonly used teaching method among the five universities. However, the overall average of the five universities is 2.21, indicating a relatively consistent belief that evaluation feedback is slightly used in student-centered teaching modes.

Based on comprehensive analysis, in the survey on the teacher dimension, the platform selection section showed that the teacher rating of University A was the lowest. The resource construction includes: video images (with the lowest rating from University A), network connectivity (with University A and University D both having the lowest ratings), courseware cases (with University A having the lowest rating), and test exercises (with University A and University B both having the lowest ratings). The exploration of teaching methods includes: cooperative learning (with the lowest score in University A), service-oriented learning (with the lowest score in University E), exploratory learning (with the lowest score in University D), and project-based learning (with the lowest score in University D). The evaluation feedback includes: incentive mechanism (University A has the lowest score), interactive design (University A has the lowest score), evaluation system (University A has the lowest score), and feedback improvement (University E has the lowest score).

According to the evaluation criteria set by this research institute, the universities with the lowest scores mentioned above are all between "slightly agree". According to Liang Fuxin (2023), when promoting a student-centered teaching mode, teachers must strengthen their construction in terms of platform selection, resource construction, teaching exploration, and evaluation feedback. At present, there are still significant shortcomings in the work of teachers from the five universities in the above-mentioned aspects. This will undoubtedly affect the final teaching effect.

B) Student

Table 5Comparative mode of student-centered teaching in terms of tool preparation

Items	UA	UB	UC	UD	UE	TotalMean	SD	VI
Tool preparation	3.06	2.89	3.12	3.17	2.89	3.03	0.80	M A
Total						**3.03**	**0.80**	**M A**

Tool preparation refers to various learning facilities and equipment prepared for students to participate in student-centered learning modes. In the table, the total mean of tool preparation is 3.03, so the verbal interpretation is moderately agreed, which means that all five universities are well prepared and using various learning facilities and equipment. Among them, university D performed the best, with the highest average of 3.17.

Table 6Comparative mode of student-centered teaching in terms of knowledge exploration

Items	UA	UB	UC	UD	UE	Total Mean	SD	Rank	VI
1.Multidimensional learning	2.19	3.10	3.20	3.25	2.67	2.88	0.83	1	M A
2.Ubiquitous learning	2.38	2.67	2.54	2.78	2.45	2.56	0.91	2	S A
3.Personalized learning	2.90	2.28	2.38	2.10	2.78	2.49	0.70	3	S A
Total						**2.64**	**0.81**		**M A**

The knowledge exploration teaching mode refers to the multidimensional, ubiquitous, and personalized exploration and learning of relevant knowledge content by students. In the table, the total mean of the knowledge exploration teaching mode is 2.64, so the verbal interpretation is moderately agreement, which means that the five universities have effectively utilized various learning methods in the student-centered teaching mode. Among them, multidimensional learning is particularly used the best, with the highest average value of 2.88.

Table 7Comparative mode of student-centered teaching in terms of capacity building

Items	UA	UB	UC	UD	UE	Total Mean	SD	Rank	VI
1. Professional competence	1.97	2.89	2.82	2.18	2.62	2.50	0.75	2	S A
2. Social ability	1.92	2.82	2.98	2.97	2.54	2.65	0.72	1	M A
3. Method capability	1.89	1.80	1.85	1.97	2.09	1.92	0.79	3	S A
Total						**2.36**	**0.75**		**S A**

Capacity building is used in this study to consider the process by which students enhance their personal abilities, skills, and resources, with the aim of improving their performance and effectiveness in achieving specific goals. From the table, it can be seen that the five universities have relatively less agreement on the method capability section (1.92), which is useful. However, the overall average of the five universities is 2.36, which is explained by their slightly agreement in different aspects of capacity building.

Table 8Comparative mode of student-centered teaching in terms of personality development

Items	UA	UB	UC	UD	UE	Total Mean	SD	Rank	VI
1. Learning motivation	2.23	2.16	2.14	2.33	2.89	2.35	0.86	3	S A
2. Learning attitude	2.07	2.45	2.30	2.37	2.77	2.40	0.87	2	S A
3. Learning method	2.49	2.33	2.03	2.88	2.82	2.51	0.92	1	S A
Total						**2.42**	**0.88**		**S A**

Personality development is used in this study to consider the process in which individual students gradually form, shape, and improve their unique personality traits and behavioral patterns through the interaction between internal psychological growth and external environmental influences during their college career. As shown in the table, the five universities have relatively less agreement on the learning attitude section (2.77), which is useful. However, the overall average of the five universities is 2.42, which is explained by their slightly agreement personality development patterns.

Table 9Specific evaluations of teacher teaching methods by surveyed students

Items	UA	UB	UC	UD	UE	Total Mean	SD	Rank	VI
1.Blended learning method	2.72	1.97	2.09	2.12	2.28	2.24	0.8	4	S A
2.Flipped Classroom	2.65	2.82	2.39	3.20	3.21	2.85	0.78	1	M A
3.Action learning method	1.92	1.89	2.18	2.25	3.18	2.28	0.8	3	S A
4.Individual and group teaching methods, as well as the combination of individual and group teaching methods	1.78	1.89	2.90	3.21	3.90	2.74	0.78	2	M A
Total						**2.53**	**0.79**		**S A**

The table shows that in this mode, the use of flipped classroom (2.85) is the most useful teaching method in 5 universities. However, the overall mean across the five universities was 2.53, with relative agreement that teaching methods were slightly used in the student-centered teaching mode.

Based on the survey results of students from five universities in ABCDE, it can be seen that although different universities have implemented the student-centered teaching mode, and basically do not break away from the "two-dimensional the third mock examination and four steps" framework. However, due to differences in the teaching philosophy of teachers and specific learning limitations, there are still significant differences and different focuses in the implementation of student-centered teaching modes in different schools. Through the survey and organization of questionnaire data, it can be seen that:

In the process of implementing a student-centered teaching mode, University A emphasizes more on exploring teaching methods and methods, mainly focusing on the exploration and application of teaching modes; In terms of setting

educational goals, there are obvious shortcomings. This reflects the university's neglect of the student-centered teaching mode and a greater focus on exploring forms. On the contrary, the performance of teachers at University B in this regard is evident. Through the analysis of questionnaire survey data, it can be seen that the teachers at the university have a more comprehensive grasp of the goals under the student-centered teaching mode. However, there is a significant lack of exploration in the field of methods and approaches. Although universities C and D have received relatively balanced evaluations in implementing student-centered teaching modes, each aspect is relatively mediocre, making it difficult to achieve ideal teaching outcomes. Compared with the aforementioned universities, University E's performance in implementing a student-centered teaching mode is relatively mediocre. There are still significant shortcomings in both the exploration of teaching mode implementation methods and the setting of teaching objectives. However, from the perspective of the framework of "two-dimensional the third mock examination and four steps", University E is also outstanding in the application of some teaching methods.

Table 10 Evaluation of Teaching Forms of Teachers by Survey Students from Five(5) universities

Items	UA	UB	UC	UD	UE	Total Mean	SD	Rank	VI
1. Time integration	1.89	1.88	2.32	1.98	2.09	2.03	0.66	2	S A
2. Space integration	2.64	2.44	2.17	2.28	2.43	2.51	0.77	1	S A
Total						**2.27**	**0.71**		**S A**

Effectively integrating students' time and space resources is not only conducive to fully tapping and utilizing learning resources, but also provides support for students' independent learning and exploration, and has a positive effect on establishing the subject status of students in the classroom. In the exploration of teaching formats, five universities have relatively less agreement that time integration (2.03) is useful. However, the overall average of the five universities is 2.27, which is explained by their slight consistency in different forms of teaching.

In summary, there are certain commonalities among the five universities in China in implementing student-centered teaching modes, but there are also significant differences. The reason for this difference is directly related to the differences in understanding and cognition of student-centered concepts among teachers, as well as the differences in hardware configurations.

Table 11 Best practice demonstration of student-centered teaching mode

Excerpt of Interviews	Practice	Source
1. Highlight the subjectivity of students. Ensure that personalized needs and autonomous development of students are highly valued. *"The dominant position of students is indisputable."*	1. Teachers is trying their best to change their mindset and abandon the traditional practice of "teachers teach, students listen"; 2. Strengthen ideological and moral education for both teachers and students, respect and understand each other; 3. Students at their best is embracing the attitude of "you want me to learn" to" I want to learn". Clear learning objectives, positive learning attitude, proactive thinking, questioning, and stimulating the teaching vitality of teachers.	Teacher
2. Students need feedback, and teachers also need feedback. *"Today's universities do need to keep up with the times. A scientific evaluation and feedback system and practices are of great benefit to the effectiveness of education."*	There should be a comprehensive evaluation and feedback system, preferably both on the platform and within the system. Being able to provide timely feedback to students about learning outcomes, helping them understand their mastery of subject knowledge, identifying and filling gaps, and making effective adjustments. Encourage students to provide feedback on their teaching effectiveness to teachers in various subjects and evaluate them.	Teacher

3. All kinds of relationships in the entire school need to form a positive trend and build a good learning environment for students. *"Teachers should understand that the school's senior management and management departments need to coordinate planning, and the senior management and management departments should also understand the difficulties and needs of frontline teachers."*	1) School leaders attached importance to the implementation of student-centered teaching mode, pay attention to platform resource construction, teacher team construction, and increase funding investment; 2) Good teacher-student relationship and mutual respect. Teachers are willing to listen to students' ideas, and students are also willing to help teachers improve teaching quality. 3) The administrative department and teachers have a harmonious relationship and mutual understanding. The entire school forms an interactive atmosphere of harmony, trust, and support that is linked up and down.	Administration
4. Personalized course design should be provided based on the disciplinary characteristics, learning abilities, and interests of college students in different majors. *"Teachers can use videos or images instead of single text in teaching design to showcase teaching content. Obviously, this approach not only helps to diversify teaching methods, but also enhances students' attention and interest in classroom teaching, especially effective for professions such as medicine, aesthetics, and engineering."*	Course design optimization, designed according to different professional characteristics, such as using teaching methods such as inserting relevant videos, pictures, or cases, can also guide students to fully utilize excellent learning platforms before, during, and after class.	Teacher
Teachers need to constantly update and adopt different teaching methods in order to greatly help students understand the learning content and guide them to think about problems from different perspectives. *"The cultivation of teachers' abilities should not be underestimated, as it directly involves how much they can teach students." "To give students a bowl of water, the teacher must first have a bucket of water."*	Teaching methods can adopt more diverse and advanced approaches. For example, students can be encouraged to actively participate in classroom discussions, group collaboration projects, etc., transforming passive knowledge acquisition into active exploration and discovery, cultivating problem-solving skills and critical thinking.	Administration

Table 12A Supplemental data in the problem and challenge

Items	UA	UB	UC	UD	UE	Total Mean	SD	Rank	VI
1.Effectiveness	2.09	2.14	2.20	2.33	2.13	2.18	0.7	1	S A
2.Teachers respect the subjective status of students in evaluation	1.21	0.99	1.12	1.54	1.30	1.23	0.78	3	N A

3.Evaluation of the impact of student-centered teaching mode on the transformation of teaching mode	1.28	1.34	1.45	1.89	1.09	1.41	0.73	2	N A
Total						**1.61**	**0.74**		**N A**

As shown in the table, the five universities relatively agree that teachers respect students as the main body of evaluation (1.23), and their evaluation of effectiveness is also relatively low (2.18). However, the overall average of the five universities is 1.61, which is explained as their complete disagreement.

For this issue, more analysis comes from interviews with teachers and school administrators, as shown in the following table:

Table 12B

Excerpt of Interview	Issues	Challenge	Source
1. Some senior teachers do not agree with this teaching mode, or agree but cannot implement it. They are more inclined towards traditional practices and insist that this is the responsibility of teachers. *"The duty of a teacher is to teach. I teach, students listen, and learn." "We have been teaching half a lifetime, and all we need is a chalk and a blackboard. Now we have to using a computer to operate, there are too many skills to learn. I would rather use this time to prepare lessons."* 2. Students have low enthusiasm for learning and are unclear about why and how to learn. *""Students may lack intrinsic learning motivation and purpose, not knowing why they are learning, and not clear on how to effectively learn."*	1. Teachers may feel uncomfortable in transitioning from being knowledge transmitters to guides in the learning process; 2. Students have low interest in exploring knowledge, feel confused and helpless.	1. The challenge of transforming concepts; 2. There is a serious lack of shaping of ideal beliefs among students.	Teacher
The evaluation system is missing, teachers do not know how effective their teaching is, and students have suggestions but no feedback. *"Today's universities do need to keep up with the times. A scientific evaluation and feedback system and practices are of great benefit to the effectiveness of education."*	The lack of an evaluation system is a significant issue when implementing a student-centered teaching mode. The traditional education evaluation system often relies too much on standardized exams and scores, while neglecting the evaluation of students' comprehensive abilities such as personalized development, innovation ability, teamwork ability, and critical thinking. In this situation, even if schools strive to promote student-centered teaching reforms, it is difficult to effectively reflect the comprehensive growth and progress of students through existing evaluation systems.	Challenge the urgent need to establish a more comprehensive and fair evaluation mechanism. One is to purchase or develop a set of evaluation software that meets the specific situation of the school; The second is to establish rules and regulations. All of this requires the school's senior management to coordinate planning, allocate funds, and strengthen attention in order to be completed.	Teacher
1. The online education platforms	Universities face resource	1. Funding is an important	Administrati

provided by schools to teachers and students are relatively backward, and the information and educational resources are insufficient to support teachers in carrying out blended online and offline teaching;

2. There are too many things that schools need to consider in their development, often neglecting the attention to the growth of teachers themselves and the support for teaching. "Teachers should understand that the school's senior management and management departments need to coordinate planning, and the senior management and management departments should also understand the difficulties and needs of frontline teachers."

constraints in terms of funding, technology, infrastructure, and support services;
There are disagreements between teachers and teaching management departments on some issues related to development.

support for carrying out student-centered teaching reform, including purchasing and updating educational technology equipment, building flexible and diverse learning spaces, providing personalized teaching materials, and supporting teacher training. However, a limited budget may constrain the implementation of these reform measures.

In terms of teaching management mode, the management department may focus more on administrative efficiency and macroeconomic regulation, while teachers are more concerned with classroom teaching practice and innovation; There may be differences of opinion between the two(2) on how to effectively promote student-centered teaching modes, such as the freedom of curriculum design and the reform of assessment and evaluation systems.

ve personnel

Curriculum design and teaching methods are too traditional and outdated; Many teachers only impart knowledge according to the original textbook, with rigid and rigid content.

"I once selected knowledge points to participate in a youth teacher competition and made a competition courseware. For the same knowledge point, in order to participate in the competition more exciting, I designed videos and pictures in the courseware, and selected hot topics that students are concerned about as teaching cases. The classroom effect was far better than not using the competition courseware, and even after class, students were still discussing with interest."

1. Curriculum design is too static and singular: Traditional curriculum design may rely too much on textbooks, with untimely content updates, and cannot reflect the latest developments in the discipline and the needs of social practice. Such a curriculum system often lacks innovation and timeliness, leading to a disconnect between the knowledge learned by students and the real world.

2. Teaching methods are monotonous and boring: Teachers explain word for word according to the textbook, ignoring the diversity and interactivity of teaching methods, which can easily create a dull classroom atmosphere, which is not conducive to stimulating students' learning interest and active participation consciousness.

3. Knowledge transmission is too mechanical: only focusing on the transmission of knowledge content and neglecting the cultivation of understanding, application, and innovation ability of knowledge. This "cramming" teaching puts

1. Challenge teachers to possess higher educational technology skills, curriculum design abilities, and classroom management skills.
2. Providing teachers with more training opportunities, broadening their horizons, and accepting advanced teaching concepts has brought challenges to the school's teaching management department.

Teacher

students in a passive acceptance state, making it difficult to cultivate their critical thinking, problem-solving ability, and lifelong learning ability required to adapt to constantly changing environments.

Conclusions

3.1 The findings of this study indicate that within the five universities examined, a well-designed and comprehensible platform is crucial for promoting and implementing a student-centered learning model. Such a platform not only provides students with abundant learning resources but also assists educators in better guiding student self-learning, thereby fostering a more positive learning environment.

3.2 The study also revealed that despite the availability of diverse resources in the five universities, such as video materials and internet access, the potential of these resources as learning tools has not been fully realized. Their role in enhancing students' learning capabilities and teachers' instructional efficiency remains underexplored, suggesting significant room for improvement. This highlights the need to further investigate how to more effectively utilize these resources to better serve teaching and learning.

3.3 A coherent and systematic teaching approach is essential for stimulating students' enthusiasm for learning and their pursuit of knowledge. However, the study results indicate that a universally applicable "best method" has yet to be established. This gap may limit the further development of students' creativity and innovation. Therefore, future research and teaching practice should focus more on the diversity and flexibility of teaching methods to better meet the needs of different students.

3.4 For students, the learning tools employed by the five universities have been utilized to some extent in completing learning tasks and enhancing learning capabilities. However, this level of utilization is only moderate, indicating room for further optimization. This suggests the need to refine the use of these tools to better meet students' learning needs.

3.5 Within the student-centered learning model, emphasizing the development of students' well-rounded personalities is particularly important. This approach not only helps students improve their learning capabilities but also ignites their passion for learning. It underscores the fact that education is not merely the transmission of knowledge but also the cultivation and shaping of students' individualities.

3.6 During the interview process, the issues, challenges, and successful experiences mentioned by students provided valuable insights. These feedbacks have helped us deeply recognize that students should be the subjects of learning, rather than passive recipients of knowledge. This is especially important in the development of critical thinking and the promotion of students' comprehensive personality development. It reminds us that in the educational process, we must pay more attention to students' status as the main actors and encourage their active participation in the learning process.

3.7 Finally, the framework developed based on the study results will serve as an important foundation for future assessments of the student-centered learning models in universities across the province. This framework will provide educators with a systematic tool to better understand and improve teaching practices, thereby creating a higher-quality learning environment for students.

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