

Challenges, effectiveness and sustainability of educational programs in Chinese universities: Basis for continuous improvement plan

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Abstract

The study intended to comprehensively assess the current state of education programs and identify areas for development and enhancement. By doing so, it aimed to provide evidence-based recommendations and strategies that promote the holistic growth, effectiveness, and sustainability of education programs in Guizhou Minzu University and Guizhou Normal University. It employed a descriptive quantitative analysis method. Researcher's made questionnaire was utilized. The sample size was 385. Findings showed that majority of Teachers at Guizhou Minzu University are female, in 31 years old age bracket, with units in master's degree, teaching for 6 to 10 years, and attended 6 to 10 trainings or seminars related to sustainability and effectiveness of education programs. Moreover, it is found out that challenges on education as to access and equity, quality assurance, financial sustainability, faculty and staffing, curriculum and pedagogy, assessment and evaluation, and student engagement and retention were of moderate extent. In addition, education programs in terms of academic performance, student engagement, and satisfaction was effective. Sustainability of education programs as to availability and allocation of financial resources, infrastructure development, faculty recruitment and retention, and community engagement was generally agreed by the respondents. Difference on challenges, effectiveness and sustainability was generally not significant when categorized as to profile variables. There was no significant association between challenges and effectiveness on education programs. A generally weak correlation between the challenges and sustainability of education programs was noted. Lastly, the observed significant relationship between students' engagement and the availability and allocation of financial resources implies that as student engagement decreases, there is an increased need for sufficient availability and effective allocation of financial resources. The study concluded that challenges on education programs existed, effectiveness of education programs needed to be improved and its sustainability was generally agreed or positive but must be improved as well. The researcher recommended the implementation of Continuous Improvement Plan on Enhancing Development, Effectiveness and Sustainability of Education Programs in Guizhou Minzu University and Guizhou Normal University.

Keywords: challenges, effectiveness, sustainability, programs, education, university improvement plan

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1. Introduction

In an era marked by rapid globalization and technological advancements, the role of education has evolved into a pivotal force driving individual growth, societal progress, and economic development. Chinese universities, with their rich history and expanding influence, stand at the forefront of this transformative educational landscape. This dissertation embarks on a comprehensive exploration of the challenges, effectiveness, and sustainability of educational programs within Chinese universities, with a keen focus on laying the groundwork for a continuous improvement plan. As China continues to assert itself on the global stage, the quality and relevance of its higher education system become increasingly vital. This study delves deep into the multifaceted issues facing Chinese universities, ranging from access and affordability to curriculum design and pedagogical approaches. By critically assessing these challenges, we aim to provide a clear understanding of the current educational landscape in China and the obstacles that must be overcome to achieve excellence and innovation in higher education (Ting, 2018).

Effectiveness is a critical aspect of education programs in China. While access to education has improved, ensuring that education programs deliver desired outcomes and effectively prepare students for future challenges remains a priority. Effectiveness can be assessed through various indicators such as academic performance, student engagement, teacher quality, and alignment with national development goals. Evaluating the effectiveness of education programs helps identify areas for improvement, address gaps, and enhance teaching and learning methodologies (Zhou, 2021). Effectiveness is a core aspect of any educational system. In the context of Chinese universities, it encompasses not only academic outcomes but also the development of essential skills, critical thinking abilities, and the capacity to adapt to an ever-changing world. This dissertation scrutinizes the effectiveness of educational programs by considering various performance indicators and evaluating their alignment with the evolving needs of students, employers, and society.

Sustainability is another key consideration in the development of education programs. It involves ensuring the long-term viability and continuity of educational initiatives. Sustainability encompasses financial resources, infrastructure development, teacher training, curriculum design, and stakeholder engagement. By promoting sustainable education programs, China aims to create a strong foundation for continuous educational development, ensuring that future generations benefit from quality education and contribute to the country's social and economic progress (Wang, 2021). Furthermore, the concept of sustainability extends beyond the environmental realm to encompass the long-term viability and adaptability of educational programs. Sustainable education is one that can withstand external pressures, embrace innovation, and cater to diverse student populations without compromising quality. By investigating the sustainability of educational programs, this research seeks to identify areas where improvements are needed to ensure that Chinese universities can continue to thrive in the face of emerging challenges.

Education programs in Chinese universities encounter multifaceted challenges across curriculum, teaching methods, resource distribution, and student growth. Adapting curricula to societal and industry shifts remains pivotal but challenging due to the evolving professional landscape. Faculty development in modern teaching approaches and technology necessitates continuous training and support. Unequal resource allocation, including faculty shortages and inadequate infrastructure, hampers effective teaching and student progress in certain regions. Diverse student needs require comprehensive academic aid, mental health services, and career guidance. The integration of technology and online platforms presents a paradigm shift, demanding proficient utilization for improved learning experiences. Implementing rigorous assessment and quality assurance methods is crucial for genuine reflection of student and teaching standards (Shen et al., 2023).

Gaps within the challenges faced by education programs in Chinese universities encompass several critical areas. A significant gap lies in the availability of comprehensive data specific to the distinct challenges encountered by various educational institutions or regions, impeding the formulation of targeted interventions. Furthermore, inadequate data on resource allocation disparities and their impact on universities or student outcomes create obstacles in effectively addressing these disparities. Another crucial gap emerges from the limited understanding of diverse student needs and the degree to which these needs are fulfilled, complicating the tailoring of efficient support systems. Regarding program effectiveness, the absence of standardized assessment criteria across universities obstructs accurate measurements of program efficacy, while insufficient data on teaching methodologies inhibits the identification of the most effective pedagogical approaches. Similarly, a lack of comprehensive data on long-term outcomes and graduates' success rates across different fields presents challenges in assessing program effectiveness. Sustainability gaps encompass the absence of long-term planning and forecasting within educational programs, hindering the sustained alignment with evolving societal and industry needs. Additionally, inadequate comprehension of optimal resource management practices poses challenges in maintaining program quality and effectiveness over time. Integrating technological advancements and fostering innovation within educational programs remains another area requiring attention to ensure the programs adequately prepare students for future challenges. Addressing these gaps necessitates comprehensive data collection, standardized assessment methods, and strategic long-term planning to ensure the efficacy, inclusivity, and sustainability of education programs in Chinese universities.

It is imperative to be conducting a comprehensive study on the challenges, effectiveness, and sustainability of educational programs in Chinese universities lies in the critical need for continuous improvement and advancement within the education sector. China's educational landscape is evolving rapidly, with universities striving to meet the dynamic needs of a changing society and industry. However, several critical gaps and challenges persist across various facets of educational programs, necessitating a detailed investigation for informed decision-making and strategic planning. Understanding the specific challenges faced by educational institutions or regions is pivotal for targeted interventions. Lack of comprehensive data on these challenges, including resource allocation disparities and limited understanding of diverse student needs, hampers effective problem-solving. Identifying these challenges and their underlying causes is fundamental to crafting precise and effective solutions, enabling universities to better address disparities and cater to students' diverse needs. Ensuring the effectiveness of educational programs requires standardized assessment criteria and robust evaluation methods. The absence of uniform standards for assessing program efficacy and limited data on teaching methodologies hinder the identification of the most impactful pedagogical approaches. Additionally, the lack of comprehensive data on long-term outcomes and graduates' success rates across disciplines poses challenges in accurately gauging program effectiveness. An in-depth study in these areas will provide insights into improving teaching methods and refining assessment practices for enhanced program outcomes. Sustainable educational programs are vital for continually meeting the evolving demands of society and industry. Long-term planning gaps, inadequate resource management practices, and the need for technological integration are areas requiring focused attention. Aligning programs with future societal and industry needs demands effective long-term strategies, optimized resource allocation, and the integration of cutting-edge technology. Investigating these aspects will pave the way for creating sustainable education models that prepare students for future challenges. The study serves as a foundational step towards developing a comprehensive continuous improvement plan for Chinese universities' educational programs. By addressing challenges, enhancing program effectiveness, and ensuring sustainability, the plan aims to foster an environment of constant growth and adaptability. Implementing evidence-based strategies derived from this study will empower universities to enhance educational quality, meet evolving demands, and equip students with the skills required in a rapidly changing global landscape.

Objectives of the Study - The study conducted a comprehensive evaluation of education programs at Guizhou Minzu University and Guizhou Normal University, aiming to identify areas needing improvement and propose evidence-based strategies for their enhancement. It outlined several specific goals: analyzing

respondents' demographic profiles and their links to program sustainability and effectiveness, pinpointing challenges within programs encompassing access, quality, finances, faculty, curriculum, assessment, and student engagement, evaluating program effectiveness through academic performance, engagement, and satisfaction, assessing program sustainability via financial resources, infrastructure, faculty management, and community involvement, exploring interrelationships among challenges, effectiveness, and sustainability at both universities, and devising a continuous improvement plan grounded in evidence to elevate program development, effectiveness, and sustainability at both institutions.

2. Methods

Research Design - This study employed a descriptive quantitative analysis method. Descriptive research describes a certain present condition. Relatively, the method was appropriate to this study as it aims to describe the present scenario (Mittal, 2010). In this study, it comprehensively assessed the current state of education programs and identify areas for development and enhancement. By doing so, it aimed to provide evidence-based recommendations and strategies that promote the holistic growth, effectiveness, and sustainability of education programs in Guizhou Minzu University and Guizhou Normal University.

Respondents of the Study - The survey was carried out electronically, and data were gathered via the "Questionnaire Star" app on the WeChat platform. The respondents were currently employed teachers of Guizhou Minzu University and Guizhou Normal University. They had been exposed to sustainability, effectiveness and challenges of education programs in China. They had been at least teaching in the university for at least one year. Newly hired teachers without direct exposure to educational sustainability, effectiveness and challenges aspects of the education programs were excluded in the study. To ensure the statistical computation with a 5% margin of error and a 98% confidence level, the researcher use calculator.net, an online sample size calculator. Currently, the two universities have 6800 faculty members deployed in various departments and programs of the school. Sample size will be utilized. Using the Raosoft online sample size calculator, the sample size needed was 385. In this investigation, simple random sampling technique was employed until the 385 sample is reached. So, it meant that those teachers who met the criteria provided above were given chance as respondents.

Instrument of the Study - The questionnaire utilized in the gathering of data was a researcher's made questionnaire. Literatures and studies served as its resources. The researcher also made sure that validity and reliability of the researcher instrument were achieved. Part 1 delved on the demographic profile of the respondents. Part 2 utilized the insights about needs and challenges faced by Chinese universities in relation to education programs (He, et. al., 2021). Part 3 employed the insights about effectiveness of education programs in China (Zhou, 2021). Part 4 maximized insights in relation to sustainability of education programs in China (Wang, 2021). In a meticulous approach to ensure the credibility and appropriateness of the data-gathering instruments, a three-member panel of jurors was engaged for comprehensive face and content validation. These individuals were carefully selected based on their expertise in traditional opera education, research methodologies, statistical analysis, and proficiency in test construction. Their role encompassed critically examining the instruments for their relevance, clarity, and suitability to the research objectives. The feedback garnered from the jurors, comprising insightful comments, valuable suggestions, and pertinent recommendations, was meticulously integrated into the final draft of the data-gathering instruments. This collaborative refinement process ensured that the instruments were refined and optimized based on expert perspectives, enhancing their precision and appropriateness for the research context. Upon the guidance of the dissertation adviser and the research committee, the finalized version of the data-gathering instrument is slated for a pilot test. This stage is crucial to assess the instrument's reliability, ensuring that it produces consistent and dependable results. The assessment, typically conducted through indicators like Cronbach Alpha coefficient, seeks to verify the internal consistency and reliability of the items within the questionnaire survey. A Cronbach Alpha score of 0.7 or higher is indicative of strong internal consistency, affirming the reliability of the survey items in measuring the intended constructs. This process reinforces the instruments' trustworthiness and efficacy, providing confidence in their

ability to yield reliable data for the research objectives

Data Gathering Procedure - The investigator made use of electronic questionnaires that were gathered via the WeChat platform's "Questionnaire Star" application. An official request to perform a pilot test with 20 teachers was sent in writing to the school administrator of Guizhou Minzu University. After retrieving the questionnaires, the answers were coded in excel format and sent to the University research center using SPSS where the data will be analyzed and studied. The researcher sent the questionnaire through "Questionnaire Star" after it had already been validated and achieved acceptable internal consistency or reliability. The actual gathering of the data was completed in weeks. The researcher sent informed consent, explained thoroughly the purpose of the research via email and WeChat platform. Also, each respondent was given 1 hour to complete the questionnaire. Answered questionnaires were retrieved. Data were extracted, tabulated then were forwarded to a certified statistician for analysis. Results of data analysis were presented in tables. Interpretation, discussion and implication followed.

Table 1

Reliability Test Result

Indicators	CR Alpha	Remarks
Challenges of Education Programs in terms of access and equity	0.747	Acceptable
Challenges of Education Programs in terms of quality assurance	0.981	Excellent
Challenges of Education Programs in terms of financial sustainability	0.847	Good
Challenges of Education Programs in terms of faculty and staffing	0.797	Acceptable
Challenges of Education Programs in terms of curriculum and pedagogy	0.789	Acceptable
Challenges of Education Programs in terms of student engagement and retention	0.792	Acceptable
Effectiveness of Education Programs as to Students' Learning Outcomes	0.790	Acceptable
Effectiveness of Education Programs as to Academic Performance	0.845	Good
Effectiveness of Education Programs as to Student Engagement	0.866	Good
Effectiveness of Education Programs as to Satisfaction	0.833	Good
Sustainability of Education Programs as to Availability & Allocation of Financial Resources	0.830	Good
Sustainability of Education Programs as to Infrastructure Development	0.759	Acceptable
Sustainability of Education Programs as to Infrastructure Development	0.759	Acceptable
Sustainability of Education Programs as to Infrastructure Development	0.759	Acceptable
Sustainability of Education Programs as to Faculty Recruitment and Retention	0.797	Acceptable
Sustainability of Education Programs as to Community Engagement	0.817	Good

Data Analysis - The following statistical methods/tools: Frequency percentage, weighted mean and T-test were used. Frequency and Percentage was used to analyze the profile of the respondents. Weighted mean was used to describe the current state, effectiveness, innovative and best practices and challenges and gaps in traditional opera education programs. A four-point Likert Scale was used to measure the range of the respondent's assessment on current state of development, effectiveness, sustainability and extent of prevalence of challenges of the education programs in Guizhou Minzu University. T-test was employed in determining the relationship on education programs' current state, effectiveness, sustainability in the Guizhou Minzu University.

Ethical Considerations - To protect the scrutiny process' integrity, the researcher ensured that ethical issues were strictly followed. Before incorporating the respondents and participants in the study, the researcher sent informed consent to the respondents. They were in no way coerced into taking part in the process. During the course of the study, it is crucial to emphasize secrecy. In fact, before the data gathering phase, the researcher emphasized the importance of confidentiality, trustworthiness, and privacy of the personal information. In the beginning of data gathering phase, respondents were given enough information on aims and objectives of the study before the primary data collection process. The author of this paper properly cited the works of other researchers by using the APA style. Lastly, the researcher explained as to take accountability of any possible harm the study may cause.

3. Results and discussion

The composite mean (2.68) indicates that challenges were on moderate extent. Among the cited dimensions,

challenges on students' engagement and retention tallied the highest mean score (2.74) and ranked first. On the other hand, challenges on access and equity yielded the lowest mean score (2.59) and ranked the least. The highest mean score of 2.74, attributed to challenges related to students' engagement and retention, underscores the critical nature of fostering an engaging and supportive educational environment. This emphasizes the importance of implementing inclusive teaching methodologies, interactive learning approaches, and student-centered support systems that promote sustained student engagement and facilitate higher retention rates. Addressing these challenges requires the implementation of comprehensive strategies and frameworks that prioritize student engagement, foster a supportive learning environment, and promote the overall success and retention of students.

Table 2*Summary Table on Challenges on Educational Program*

Indicators	Weighted Mean	Verbal Interpretation	Rank
Access and Equity	2.59	Moderate Extent	6.5
Quality Assurance	2.71	Moderate Extent	2
Financial Sustainability	2.68	Moderate Extent	3
Faculty and Staffing	2.59	Moderate Extent	6.5
Curriculum and Pedagogy	2.62	Moderate Extent	4.5
Assessment and Evaluation	2.62	Moderate Extent	4.5
Student Engagement and Retention	2.74	Moderate Extent	1
Composite Mean	2.65	Moderate Extent	

Legend: 3.50 – 4.00 = Great Extent; 2.50 – 3.49 = Moderate Extent; 1.50 – 2.49 = Low Extent; 1.00 - 1.49 = Very Low Extent

Conversely, the lowest mean score of 2.59 associated with challenges concerning access and equity underscores the crucial need for promoting equitable access to educational opportunities. This highlights the importance of addressing disparities in access to education and ensuring that all students have equal opportunities to succeed. Addressing these challenges requires the implementation of inclusive policies and supportive frameworks that prioritize equitable access to resources, educational opportunities, and support services, thereby fostering an inclusive and equitable learning environment for all students. Overall, the findings presented in Table 2 underscore the significance of acknowledging and addressing the challenges inherent in the educational program. They emphasize the importance of implementing tailored strategies and supportive frameworks that prioritize student engagement, promote equitable access to educational opportunities, and foster an inclusive and supportive learning environment for all students. Effectively addressing these challenges requires the collaboration of educators, policymakers, and stakeholders to develop comprehensive and targeted interventions that support student success, retention, and equitable access to education.

Goode' (2018) findings support the above-mentioned results as it was emphasized that the challenges faced by higher education institutions in Ghana, particularly in terms of providing affordable access to education for all eligible students seeking postsecondary education. This issue underscores the growing demand among Ghanaian students for education that equips them with the necessary skills and knowledge to thrive in the global workforce. The challenge of affordability poses a significant barrier to ensuring inclusivity and accessibility within the higher education landscape, potentially limiting the opportunities available to students aspiring to pursue advanced studies. In addressing this challenge, it becomes imperative for educational policymakers and institutions in Ghana to explore sustainable strategies that can enhance the affordability and accessibility of higher education, thereby fostering a more inclusive and equitable educational environment for all eligible students. Confronting this pressing challenge demands a concerted effort from educational policymakers and institutions across Ghana to embark on a quest for sustainable solutions.

Table 3 shows that the composite mean (3.02) cascades that respondents' assessment education programs were generally effective. Among the three indicators, academic performance tallied the highest mean score (3.04) and ranked first, followed by student engagement (3.02). Meanwhile, satisfaction registered the lowest mean score (3.00) and ranked the least. The highest mean score of 3.04, attributed to academic performance, suggests that respondents viewed the education programs as successful in fostering positive academic outcomes. This

implies that the programs were effective in equipping students with the necessary knowledge and skills to excel academically, reflecting the efficacy of the educational curriculum and teaching methodologies in promoting student success and achievement.

Table 3*Summary Table on Effectiveness of Education Programs*

Indicators	Weighted Mean	Verbal Interpretation	Rank
Academic Performance	3.04	Effective	1
Student Engagement	3.02	Effective	2
Satisfaction	3.00	Effective	3
Composite Mean	3.02	Effective	

Legend: 3.50 – 4.00 = Very Effective; 2.50 – 3.49 = Effective; 1.50 – 2.49 = Less Effective; 1.00 - 1.49 = Not Effective

Similarly, the mean score of 3.02 associated with student engagement underscores the effectiveness of the programs in promoting active student participation and involvement in the learning process. This suggests that the programs were successful in fostering a dynamic and interactive learning environment that encouraged students to actively engage with the curriculum and course material, fostering a more enriching and fulfilling educational experience. Conversely, the mean score of 3.00 related to satisfaction implies that while the education programs were effective in terms of academic performance and student engagement, there might be room for improvement in terms of overall student satisfaction. This suggests that despite positive academic outcomes and active student engagement, students may have expressed less enthusiasm or contentment with other aspects of the educational experience, emphasizing the need for a more comprehensive approach to address the holistic needs and expectations of students.

Overall, the findings suggest that while the education programs were generally perceived as effective in promoting academic performance and student engagement, there might be opportunities for enhancing overall student satisfaction. This highlights the importance of adopting a student-centered approach that prioritizes not only academic outcomes and active engagement but also overall student satisfaction and well-being. Implementing comprehensive support mechanisms, fostering a positive learning environment, and promoting a culture of student success and satisfaction are essential in ensuring the overall effectiveness and success of educational programs. The above pattern of results is consistent with the study of Durak, Weissberg, Dymnicki, Taylor & Schellinger (2018) who analyzed the effects of implementing social and emotional learning initiatives within educational institutions. Durlak's study highlighted the significance of incorporating these programs into the core curriculum, emphasizing their role in nurturing students' comprehensive growth and enhancing the overall effectiveness of the educational system. The alignment between the current research and Durlak's findings further underscores the growing acknowledgment of the crucial role of social and emotional learning interventions in promoting students' well-rounded development and fostering an enriched educational experience.

Table 4*Summary Table on Sustainability of Education Programs*

Indicators	Weighted Mean	Verbal Interpretation	Rank
Availability and Allocation of Financial Resources	2.97	Agree	1
Infrastructure Development	2.75	Agree	4
Faculty Recruitment and Retention	2.93	Agree	2
Community Engagement	2.86	Agree	3
Composite Mean	2.88	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

The composite mean (2.88) accentuates that respondent generally agree on sustainability of education programs. Among the indicators, availability and allocation of financial resources tallied the highest weighted mean (2.97) and ranked first. Faculty recruitment and retention recorded weighted mean (2.93) and ranked second. Infrastructure development entailed weighted mean (2.75) and ranked third. Moreover, community

engagement recorded the lowest mean score (2.86) and ranked the least. Based on the analysis, it appears that the respondents generally hold a favorable view of the sustainability of education programs, as indicated by the composite mean of 2.88. This suggests a moderate to strong agreement among the respondents in terms of the overall sustainability of the educational programs under consideration. The indicator that garnered the highest weighted mean of 2.97 highlights the critical importance of the availability and allocation of financial resources for the sustainability of education programs. This suggests that the respondents recognize the significance of sufficient financial support in maintaining and enhancing the quality of educational offerings and resources, thereby contributing to the long-term sustainability of the programs.

Following closely is the indicator related to faculty recruitment and retention, which received a weighted mean of 2.93, suggesting that the respondents place significant emphasis on the effective recruitment and retention of qualified faculty members. This acknowledgment indicates an understanding of the vital role played by faculty in maintaining the academic standards and continuity of the education programs. The indicator concerning infrastructure development, with a weighted mean of 2.75, highlights the importance of continuous improvements and investments in infrastructure to support the educational environment. While this aspect received a lower score compared to the others, it still emphasizes the significance of adequate infrastructure for the sustainable operation and growth of the educational programs. Furthermore, the indicator related to community engagement, with a mean score of 2.86, ranked the least among the indicators. This suggests a need for potential improvement in community engagement strategies within the context of the sustainability of education programs, emphasizing the importance of fostering strong connections and collaboration between educational institutions and the communities they serve.

Overall, the analysis underscores the critical role played by financial resources, faculty recruitment and retention, and infrastructure development in ensuring the sustainability of education programs, while also emphasizing the need for enhanced community engagement strategies to further strengthen the overall sustainability and impact of these programs. Stated results align with the study of Moore, et. al., (2018) who denoted that while the global urgency to tackle environmental issues is widely acknowledged, there remains a lack of clarity on effective solutions. Policy initiatives at various government levels often take a uniform approach, neglecting contextual nuances, as revealed by research.

Table 5

Relationship Between Challenges on Education Program and Effectiveness of Education Programs

Access and Equity	r-value	p-value	Interpretation
Academic Performance	-0.009	0.864	Not Significant
Student Engagement	-0.044	0.393	Not Significant
Satisfaction	0.009	0.858	Not Significant
Quality Assurance			
Academic Performance	0.020	0.695	Not Significant
Student Engagement	0.014	0.780	Not Significant
Satisfaction	-0.034	0.502	Not Significant
Financial Sustainability			
Academic Performance	-0.011	0.827	Not Significant
Student Engagement	0.006	0.914	Not Significant
Satisfaction	-0.001	0.979	Not Significant
Faculty and Staffing			
Academic Performance	0.000	0.998	Not Significant
Student Engagement	-0.009	0.861	Not Significant
Satisfaction	-0.026	0.615	Not Significant
Curriculum and Pedagogy			
Academic Performance	0.032	0.528	Not Significant
Student Engagement	-0.053	0.304	Not Significant
Satisfaction	0.051	0.320	Not Significant
Assessment and Evaluation			
Academic Performance	-0.045	0.379	Not Significant
Student Engagement	0.011	0.827	Not Significant
Satisfaction	-0.005	0.928	Not Significant

Student Engagement and Retention			
Academic Performance	-0.005	0.928	Not Significant
Student Engagement	-0.025	0.625	Not Significant
Satisfaction	-0.005	0.925	Not Significant

Table 5 depicts the association between the challenges on education program and its effectiveness. It was observed that the computed r-values indicates almost negligible correlation and the resulted p-values are all greater than the alpha level. This means that there was no significant relationship exists and implies that the two variables were not correlated. This implies that the challenges experienced in education programs do not significantly impact their overall effectiveness, at least within the scope of the current analysis. The absence of a significant correlation suggests that the challenges faced, such as those related to curriculum, pedagogy, assessment, and student engagement, may not directly influence the overall effectiveness of the education programs. While the lack of a significant relationship may suggest that the challenges identified in the education programs are not directly associated with their effectiveness, it is important to note that other unexplored factors or variables could potentially contribute to the overall effectiveness of the programs. Further investigation into additional variables and a more comprehensive analysis may be necessary to gain a more nuanced understanding of the complex dynamics influencing the effectiveness of education programs.

This analysis underscores the need for a holistic approach to assessing the effectiveness of education programs, considering a wide range of factors beyond the identified challenges. It highlights the importance of exploring various elements that may contribute to program effectiveness, including teaching methodologies, student support systems, administrative policies, and resource allocation, among others. Conducting more in-depth research and analysis can provide a comprehensive understanding of the multifaceted nature of education program effectiveness and inform targeted strategies for improvement and development in the field of education. Stated results negate the study of Connolly (2019) who divulged that the impact of resource constraints, such as funding and infrastructure limitations, on the overall effectiveness of education programs. It highlighted the need for strategic resource management to address challenges and improve program outcomes.

Table 6

Relationship Between Challenges on Education Program and Sustainability of Education Programs

	r-value	p-value	Interpretation
Access and Equity			
Availability and Allocation of Financial Resources	-0.009	0.865	Not Significant
Infrastructure Development	-0.019	0.708	Not Significant
Faculty Recruitment and Retention	0.002	0.969	Not Significant
Community Engagement	0.006	0.904	Not Significant
Quality Assurance			
Availability and Allocation of Financial Resources	-0.034	0.508	Not Significant
Infrastructure Development	-0.038	0.457	Not Significant
Faculty Recruitment and Retention	-0.040	0.430	Not Significant
Community Engagement	0.020	0.701	Not Significant
Financial Sustainability			
Availability and Allocation of Financial Resources	0.014	0.788	Not Significant
Infrastructure Development	0.051	0.314	Not Significant
Faculty Recruitment and Retention	0.035	0.496	Not Significant
Community Engagement	0.004	0.942	Not Significant
Faculty and Staffing			
Availability and Allocation of Financial Resources	0.022	0.673	Not Significant
Infrastructure Development	0.064	0.211	Not Significant
Faculty Recruitment and Retention	-0.064	0.212	Not Significant
Community Engagement	0.065	0.203	Not Significant
Curriculum and Pedagogy			
Availability and Allocation of Financial Resources	-0.001	0.980	Not Significant
Infrastructure Development	-0.017	0.732	Not Significant
Faculty Recruitment and Retention	-0.058	0.252	Not Significant
Community Engagement	0.007	0.889	Not Significant

Assessment and Evaluation			
Availability and Allocation of Financial Resources	0.014	0.777	Not Significant
Infrastructure Development	0.063	0.214	Not Significant
Faculty Recruitment and Retention	0.041	0.422	Not Significant
Community Engagement	-0.042	0.412	Not Significant
Student Engagement and Retention			
Availability and Allocation of Financial Resources	-0.012	0.815	Not Significant
Infrastructure Development	0.044	0.385	Not Significant
Faculty Recruitment and Retention	0.026	0.609	Not Significant
Community Engagement	-.235**	0.000	Significant

Legend: Significant at p-value < 0.01

Table 6 displays the association between the challenges on education program and its sustainability. It was observed that the computed r-values indicates almost negligible correlation and the resulted p-values were almost all greater than the alpha level. However, only students' engagement and community engagement show significant relationship. This means that the lesser engaged, the more needs on the community engagement. The analysis presented in the table suggests a generally weak correlation between the challenges encountered in education programs and their sustainability, with the computed r-values indicating almost negligible associations. Moreover, most of the resulting p-values were greater than the predetermined alpha level, suggesting an overall lack of significant relationships between the variables. However, it is noteworthy that the variables of students' engagement and community engagement displayed a significant relationship. The observed significant relationship implies that as students' engagement decreases, there is a corresponding increase in the need for community engagement. This suggests that when students are less engaged in the educational process, there is a greater necessity for active involvement and support from the community to sustain the educational programs effectively.

While the other variables may not demonstrate significant correlations, the identified association between students' engagement, community engagement, and the challenges faced in education programs highlights the importance of fostering a collaborative and supportive learning environment. It emphasizes the critical role of both student and community engagement in ensuring the long-term sustainability of education programs. This suggests that creating avenues for increased student engagement and community involvement could contribute to the overall sustainability and effectiveness of education programs, thereby fostering a more inclusive and supportive educational ecosystem.

Further research and analysis may be required to explore the underlying factors contributing to the observed relationships and to identify potential strategies for enhancing student and community engagement within education programs. Understanding the intricate dynamics between student engagement, community involvement, and the challenges faced in education can inform targeted interventions and initiatives aimed at fostering a more sustainable and supportive educational environment for all stakeholders involved.

The recent findings challenge the assertions put forth by Mondragon et al. (2023), which highlighted the difficulty higher education institutions faced in incorporating sustainability into their curricula and fostering sustainability competences among students. Contrary to Mondragon et al.'s viewpoint, the present study suggests that challenges within education programs do not necessarily impede the sustainability of such programs. Instead, it emphasizes that strategic management of challenges, such as resource constraints and infrastructure limitations, can foster sustainability in education programs. By addressing these challenges with effective resource allocation and curriculum adaptations, education programs can still equip students with the necessary skills and knowledge to contribute to the development of sustainable societies. This synthesis underscores the significance of proactive approaches to manage challenges within education programs, enabling institutions to integrate sustainability effectively into their curricula and cultivate sustainability competences among students.

Table 7*Relationship Between Effectiveness of Education Programs and Sustainability of Education Programs*

Academic Performance	r-value	p-value	Interpretation
Availability and Allocation of Financial Resources	0.027	0.598	Not Significant
Infrastructure Development	0.097	0.057	Not Significant
Faculty Recruitment and Retention	-0.022	0.664	Not Significant
Community Engagement	-0.039	0.444	Not Significant
Student Engagement			
Availability and Allocation of Financial Resources	-.259**	0.000	Significant
Infrastructure Development	-0.013	0.794	Not Significant
Faculty Recruitment and Retention	-0.001	0.981	Not Significant
Community Engagement	0.020	0.694	Not Significant
Satisfaction			
Availability and Allocation of Financial Resources	-0.004	0.938	Not Significant
Infrastructure Development	0.010	0.848	Not Significant
Faculty Recruitment and Retention	0.029	0.573	Not Significant
Community Engagement	0.001	0.981	Not Significant

Legend: Significant at p-value < 0.01

Table 7 shows the association between the effectiveness of education program and its sustainability. It was observed that the computed r-values indicates almost negligible correlation and the resulted p-values were almost all greater than the alpha level. However, only students' engagement and availability and allocation of financial resources shows significant relationship. This means that the lesser engaged, the more needs on the availability and allocation of financial resources. The analysis presented in the table suggests that there is a generally weak correlation between the effectiveness and sustainability of education programs, as indicated by the computed r-values, which suggest nearly negligible associations. Additionally, the resulting p-values being greater than the predetermined alpha level indicate an overall lack of significant relationships between the variables, except for students' engagement and the availability and allocation of financial resources.

The observed significant relationship between students' engagement and the availability and allocation of financial resources implies that as student engagement decreases, there is an increased need for sufficient availability and effective allocation of financial resources. This highlights the importance of adequate financial support and resource allocation in fostering and sustaining student engagement within education programs. It suggests that a lack of financial resources can potentially hinder efforts to promote effective student engagement, thereby impacting the overall sustainability and success of education programs. While the other variables may not demonstrate significant correlations, the identified association emphasizes the critical role of financial resources in supporting and fostering student engagement within education programs. It underscores the significance of ensuring the availability and effective allocation of financial resources to create an environment that promotes active student participation and engagement, thereby contributing to the overall effectiveness and sustainability of education programs.

Further research and analysis may be required to explore the underlying factors contributing to the observed relationships and to identify potential strategies for enhancing student engagement and optimizing the availability and allocation of financial resources within education programs. Understanding the intricate dynamics between student engagement and financial resource allocation can inform targeted interventions and initiatives aimed at fostering a more sustainable and supportive educational environment for all stakeholders involved. The current findings challenge the assertions put forth by Pauw, et. al., (2019), which highlighted the positive impact of education sustainability development on student outcomes, particularly in terms of their sustainability consciousness. Contrary to Pauw et al.'s viewpoint, the present study suggests that the effectiveness of education programs and their sustainability are not inherently interconnected. It emphasizes that while education sustainability is a crucial aspect of holistic student development, the effectiveness of education programs relies on various other factors, such as curriculum design, teaching methodologies, and resource management. This synthesis underscores the importance of recognizing the multifaceted nature of education program effectiveness, which encompasses not only sustainability awareness but also academic achievement,

critical thinking, and overall student growth.

4. Conclusions and recommendations

The teachers at Guizhou Minzu University, mostly female and within a specific age range, hold master's degrees and possess moderate teaching experience and training. This diverse educator group reflects a commitment to ongoing learning and staying current with pedagogical and sustainability practices. The challenges identified in Chinese university educational programs, while moderate, present an important area for improvement. This highlights the need for a concentrated effort to develop sustainable solutions that boost the effectiveness of these programs. The respondents' positive perception of the educational programs highlights the universities' commitment to excellence and quality. Strengthening these areas while addressing improvements can create a more supportive environment, empowering students and faculty. The study shows respondents see Chinese universities' programs as sustainable, emphasizing the need for ongoing improvements in finances, faculty, infrastructure, and community engagement to enhance sustainability and support learning. Demographics do not influence disparity or difference in perceiving challenges, effectiveness and sustainability of education programs. Challenges within education programs have no bearing on their effectiveness or sustainability, which contradicts how these factors often intersect. It is essential to recognize that while interconnected, the relationships between challenges, effectiveness, and sustainability can be complex and influenced by various factors. Continuous improvement plan for sustainable, effective education programs in Chinese universities was proposed.

School administrators may enhance educator support through mentorship and diverse training, integrating emerging sustainability practices by encouraging participation in specialized workshops and online courses may keep educators updated in the evolving educational landscape. Faculty members and instructors may set up a structured feedback system involving students, faculty, and staff to address challenges by gathering specific insights. Academic department may offer robust student support services, including academic advising and mental health resources, aiming to enhance student engagement and well-being. Embracing technology-enhanced learning tools may provide faculty and students with dynamic educational experiences through personalized learning and modern resources. School HR department and non-teaching employees may adopt sustainable financial practices, like transparent budgeting and diverse funding, ensuring stability for educational programs. Student affairs or student services may use a multifaceted approach to enhance program effectiveness and sustainability by prioritizing student engagement, community participation, and resource allocation. University administrators and academic leaders may address bureaucratic hurdles, streamline administrative processes, and allocate resources efficiently, set bureaucratic hurdles, streamline administrative processes, and allocate resources efficiently, and develop long-term strategic plans, prioritize infrastructure improvements, and ensure financial stability through diversified funding sources. Future researchers may conduct comparative analyses between different Chinese universities or international institutions to identify best practices that effectively address challenges and promote sustainable and effective educational programs.

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