

Optimizing BRICS Educational Cooperation: a Symbiosis Theory Perspective

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Abstract

As a model of South-South educational cooperation, BRICS has pioneered a new cooperative paradigm, with its membership expansion bringing new historical opportunities. The symbiotic development of BRICS educational cooperation not only promotes the complementarity of educational resources and capacity building among members but also offers a replicable model for global South-South educational cooperation, significantly contributing to a fairer and more inclusive international education governance system. From the perspective of symbiosis theory, the symbiosis structure of BRICS educational cooperation is clarified and the symbiosis pattern is considered based on four elements: symbiosis unit, symbiosis model, symbiosis interface and symbiosis environment. At present, the educational cooperation among BRICS is characterized by heterogeneity and lack of vitality. The mode of symbiosis is constrained and the deep cooperation is limited. The symbiotic interface is disordered and the flow of resources is blocked. The symbiotic environment is weak and external support is insufficient. In the future, we should promote the symbiotic development of BRICS educational cooperation through strengthening the symbiotic unit and releasing the vitality of cooperation; optimizing the symbiosis mode and increasing the stickiness of cooperation; improving the symbiotic interface and smoothing communication channels; enhancing the resilience of the symbiotic environment and promoting the symbiotic situation.

Keywords: symbiosis theory, BRICS, educational cooperation, Global South, global education governance.

Оптимизация образовательного сотрудничества стран БРИКС: перспектива теории симбиоза

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Аннотация

Являясь моделью партнерства южных стран, в том числе образовательного, объединение БРИКС инициировало новую парадигму сотрудничества. При этом увеличение количества стран в его составе предоставляет и новые возможности. Симбиотическое развитие сотрудничества в рамках БРИКС способствует взаимодополняемости образовательных ресурсов стран-участниц и росту их потенциала. Такое развитие имеет результатом воспроизводимую модель глобального образовательного сотрудничества Юг-Юг, вносит значительный вклад в создание более справедливой и инклюзивной международной системы управления образованием. В исследовании с позиции теории симбиоза анализируется структура образовательного сотрудничества в рамках БРИКС, исследуется его реальная конфигурация через призму четырех элементов: симбиотических единиц, моделей симбиоза, интерфейса симбиоза и среды симбиоза. В настоящее время образовательное сотрудничество БРИКС сталкивается с рядом проблем. Гетерогенность симбиотических единиц сдерживает динамику взаимодействия. Ограниченность моделей симбиоза препятствует развитию кооперации участников. В силу нарушения симбиотического интерфейса блокируются ресурсные потоки, симбиотическая среда ослабевает, появляется дефицит внешней поддержки. Необходимо развивать образовательное сотрудничество БРИКС такими средствами, как: усиление симбиотических единиц для активизации взаимодействия, оптимизация моделей симбиоза для повышения устойчивости сотрудничества, совершенствование интерфейса симбиоза для обеспечения беспрепятственных каналов коммуникации, а также укрепление стабильности среды симбиоза для содействия формированию симбиотической системы.

Ключевые слова: теория симбиоза, БРИКС, образовательное сотрудничество, Глобальный Юг, глобальное управление образованием.

Introduction

O' Neill, Chief Economist at Goldman, astutely captured rapid economic growth of Brazil, Russia, India, and China, and potential of these emerging economies in global governance, first coined the term BRICS in 2001 (O'Neill, 2001). Driven by shared interests and political objectives, the BRICS transformed from a statistical investment concept into a formal international relations entity, with the aim of establishing a just, balanced, and equitable new international order. Since its inception, the BRICS has been rooted in the common interests of developing countries, with trade and finance emerging as the core engines of cooperation. Over time, BRICS cooperation has expanded into more than 30 key areas, including political security, cultural exchanges, scientific innovation, and sustainable development (Verma & Papa, 2021), thus creating a broad, multifaceted, and dynamic cooperation system. As political and economic exchanges have deepened,

the role of cultural exchanges in bridging differences and resolving conflicts has become increasingly prominent. Education, as an integral part of cultural exchange, has become a critical link in fostering cooperation among BRICS, given its foundational, pioneering, and enduring functions. This was particularly emphasized in the 10th BRICS Summit Declaration in 2018, which reaffirmed the importance of cultural exchanges, elevating it to the same level of priority as driving the Fourth Industrial Revolution.

For a long time, global education policies, evaluation standards, and academic discourses have been dominated by European and American countries. This unequal power structure has limited the influence of Southern countries in global education governance. To address this imbalance, there is an urgent need to build an open and inclusive global education system that fosters a more just and sustainable global educational ecosystem. As leaders of the Global South, BRICS are committed to establishing a new framework for educational cooperation based on equality and multilateralism. Through this approach, they aim to enhance their influence in global education and contribute to reshaping the international education order. BRICS has developed a new model of cooperation that differs from traditional North-South relations, establishing an anti-dependent educational partnership and opening a path for more equal and multilateral cooperation tailored to the needs of developing countries.

Furthermore, Saudi Arabia, Egypt, the United Arab Emirates, Iran, and Ethiopia officially became members of BRICS in 2024. As the "Greater BRICS Cooperation" enters its inaugural year, new historical opportunities continue to emerge. At present, it is necessary to review the current landscape of educational cooperation. Based on this understanding, the challenges faced by BRICS educational cooperation should be analyzed, and effective strategies proposed to deepen this cooperation.

Literature Review

Research on BRICS educational cooperation, initiated in 2013, is now a key focus for Global South and Western countries. Scholars study its background, mechanisms, achievements, challenges, and future strategies. However, issues remain, including economic disparities, institutional barriers, cross-cultural obstacles, and over-reliance on government-led "soft mechanisms." Additionally, overlaps with initiatives like the Belt and Road cause resource dispersion and priority conflicts.

Background of BRICS Educational Cooperation

As pivotal emerging economies, BRICS nations wield significant influence in global economic and political arenas. Amidst economic globalization, their intertwined economies face shared challenges, from coordinating responses to international financial order reforms to addressing climate change and sustainable development. Educational cooperation has emerged as a linchpin for advancing national development and enhancing international competitiveness. BRICS higher education collaboration aims to reshape traditional cooperation models, foster a new partnership paradigm, reduce dependency on Western powers, and amplify developing countries' voices in global higher education. This includes promoting diversified evaluation metrics for world-class universities. Scholars note that BRICS originated from dissatisfaction with the Western-dominated order, with educational cooperation serving as a cornerstone for developing nations to assert agency. Through collaboration, member states seek to strengthen educational capacities, gain leverage in global education governance, and elevate their international standing (Oleksiyenko & Yang, 2015).

Mechanism of BRICS Educational Cooperation

The BRICS educational cooperation framework is characterized by government-led, multi-level governance. At the apex, BRICS summits provide top-level design, repeatedly advocating educational cooperation initiatives and strategic directions. For instance, annual summit declarations emphasize educational collaboration and endorse cross-sectoral cooperation in higher and vocational education. At implementation tier, the Education Ministers' Meeting translates leadership visions into actionable goals formulating development plans for the BRICS Network University and University Alliance, and advancing frameworks for academic qualification mutual recognition.

Progress in BRICS Educational Cooperation

Higher educational cooperation has yielded tangible outcomes. The BRICS Network University and University Alliance, established since cooperation's inception, have enlisted numerous top institutions from Russia, China, India, Brazil, and South Africa. They facilitate graduate programs, joint research, and collaborations in priority fields like energy, computer science, and ecology, driving academic exchange and talent cultivation (Sokolov et al., 2021). Concurrently, student mobility has expanded: China, for example, saw a surge in BRICS enrollments (2010–2018), with rising government scholarship recipients and co-authored research papers. In vocational education, the BRICS Vocational Education Alliance (founded 2022) has organized teacher training and skills competitions, elevating vocational education quality and influence (Gouveia et al., 2024).

Challenges Faced by BRICS Educational Cooperation

Economic headwinds significantly impact cooperation. Post-2020, except for China and India, BRICS economies like Russia, Brazil, and South Africa faced slowdowns or recessions, reducing educational cooperation budgets. Funding shortages have constrained project implementation. Divergent education systems, varying in goals, standards, and evaluation metrics, hinder credit recognition and multilateral agreements, complicating collaboration. Additionally, linguistic and cultural barriers impede communication, risking misunderstandings and diminishing cooperation efficacy.

Future Development Strategies for BRICS Educational Cooperation

To promote sustainable development of BRICS educational cooperation, joint efforts are needed from multiple aspects. In terms of financial support, financing channels should be broadened. Adequate financial support can be provided for educational cooperation by establishing special education funds through the New Development Bank of the BRICS, encouraging member countries to donate, and attracting social investment and commercial funds. In terms of improving the cooperation mechanism, we should further give play to the synergistic role of multiple subjects, strengthen cooperation among governments, universities, social organizations, etc., improve mechanisms for talent training, scientific research cooperation, quality assurance, etc., and improve the efficiency and quality of cooperation (Kirton & Larionova, 2022).

Existing literature largely focuses on introducing and comparing the similarities and differences in the education systems of BRICS member countries. Research on BRICS educational cooperation is often fragmented within the broader field of cultural exchanges, and has yet to delineate a comprehensive framework for BRICS educational cooperation or address the core issues needed to deepen such cooperation. Most studies remain descriptive, lacking a theoretical analysis of the patterns of educational cooperation. This gap provides a clear direction for this research.

Theoretical Perspective

Symbiosis theory consists of four key elements: symbiotic units, symbiotic patterns, symbiotic interfaces, and the symbiotic environment. The symbiotic unit refers to the basic building block of the symbiotic system; the symbiotic pattern describes the modes of interaction between symbiotic units; the symbiotic interface refers to the relational rules and mechanisms through which symbiotic units establish connections; and the symbiotic environment consists of external factors that influence the symbiotic system. Within a given symbiotic environment, symbiotic units interact organically through the symbiotic interface, thus fostering overall development according to a specific symbiotic pattern.

As a theoretical tool for optimizing the development of entities, symbiosis theory offers a unique perspective for analyzing BRICS educational cooperation. In line with the principles of symbiosis theory, which posits that cooperation is the essence of symbiosis, the educational collaboration among BRICS aligns closely with the “win-win” or “multi-win” concept advocated by the theory. This collaboration embodies the core characteristics of symbiotic relationships, namely co-adaptation, co-development, and co-evolution, and demonstrates the logical paradigm of symbiosis.

Methodology

This study adopts a deductive approach based on symbiosis theory to analyze BRICS educational cooperation. Starting from the core concepts and analytical framework of symbiosis theory, it identifies four key elements: symbiosis unit, symbiosis model, symbiosis interface, and symbiosis environment, as the analytical dimensions. Through deductive reasoning and systematic theoretical derivation, the study clarifies the internal symbiotic structure of BRICS educational cooperation, examines its current state and existing issues, and further deduces targeted, feasible, and sustainable strategies to promote its long-term symbiotic development, ultimately aiming to construct a comprehensive theoretical explanation for the practical optimization paths.

The Current State of Educational Cooperation in BRICS from the Perspective of Symbiosis Theory

Macro- and Micro-Level Linkage Symbiotic Units

The symbiotic unit, a fundamental component of production and exchange in a symbiotic relationship, is essential for its formation. In BRICS educational cooperation, these units span both macro-level government bodies responsible for vision and planning, and micro-level implementation entities tasked with executing initiatives.

At the macro level, BRICS governments, through leaders' summits, propose educational cooperation initiatives that lay the groundwork for collaboration. Each summit emphasizes deepening cultural exchanges and encouraging cooperation in education and academic exchanges. The first BRICS Education Ministers' Meeting in 2013 formally initiated multilateral educational cooperation, providing a platform for policy-level discussions. The Education Ministers' Declaration, a key outcome of each meeting, outlines specific action plans in areas such as higher education, vocational education, and digitalization, reflecting the historical continuity and adaptability of BRICS educational cooperation.

At the micro level, BRICS have formed alliances to leverage higher education's role in national strategic decision-making and emerging economic development. The BRICS Network University, comprising 56 units with disciplinary strengths, fosters collaboration in joint training, research, and cultural exchange. Similarly, other alliances also play important roles in promoting educational cooperation. The BRICS Universities

League, with 55 comprehensive and research-oriented universities, provides a platform for collaborative research and academic exchange. The BRICS+ Universities Association, including 154 universities, aims to create an open and inclusive educational cooperation ecosystem. In vocational education, the BRICS TVET Cooperation Alliance, with 68 members from industry organizations and vocational institutions, seeks to establish a platform for multilateral dialogue and project cooperation.

Diversified Symbiotic Models from Basic to Advanced

The symbiotic model refers to the specific forms of close relationships between symbiotic units in a system, reflecting the modes and intensity of their interactions. Within the framework of BRICS educational cooperation, the exchange and cooperation between higher education and vocational education exhibit a symbiotic model that evolves from basic to advanced forms, providing multiple pathways for educational collaboration.

As the most fundamental form, point symbiosis is characterized by time-limited, scope-restricted collaboration lacking long-term stability. In BRICS cooperation, this manifests in short-term meeting-based partnerships. For example, the December 2024 BRICS+ Universities Summit ("Building Bridges: Academic Cooperation in the BRICS+ Era") aims to share best practices and forge partnerships. While collaboration is constrained to the meeting's duration, such initiatives serve as critical starting points, enabling concentrated resource allocation to address specific issues and lay groundwork for deeper engagement.

Intermittent Symbiosis involves periodic collaborative intervals, often materializing as short-term projects in BRICS education. The annual BRICS Summer Program at Fudan University's BRICS Studies Center exemplifies this, offering modules on Chinese society, BRICS cooperation, and global governance, alongside practical activities like New Development Bank visits. Similarly, "Vocational Bridges to the World" workshops and "Future Career Stars" camps address industrial upgrading needs by enhancing faculty skills and student development. Intermittent symbiosis balances flexibility with targeted outcomes, generating tangible results to support BRICS educational objectives.

Continuous symbiosis emerges as cooperation deepens, with units maintaining long-term collaborative relationships. In BRICS education, alliance-based partnerships exemplify this model, most notably the BRICS Network University. Uniting elite institutions, it focuses on priority areas like the natural environment, resource infrastructure, and technological support for Southern industrial development. Its scope spans BRICS studies, ecology, energy, computer science, and post-expansion fields such as sustainable industries and food security. Offering joint training, postgraduate courses, research projects, and academic exchanges, it fosters stable, enduring cooperation (Kovalev & Shcherbakova, 2019). This type of alliance-based collaboration helps improve the overall quality of higher education in BRICS and promotes in-depth cooperation in areas such as technological innovation and talent cultivation.

As the advanced stage of symbiotic system development, Integrated Symbiosis achieves full, close integration of symbiotic units. Cross-border collaborative education not only facilitates the international flow of educational resources but also nurtures talent with global perspectives and cross-cultural capabilities. North China University of Water Resources and Electric Power Ural Institute, established in January 2018 and approved by China's Ministry of Education, is the first cooperative educational institution under the BRICS Network University framework. This college leverages the strengths of Sino-Russian partnerships in fields such as water resources and energy to offer specialized programs and a dual-degree system. It not only deepens China-Russia educational

cooperation but also promotes the international mobility of talent and the sharing of academic outcomes.

Symbiotic Interface Balancing Process and Outcomes

The symbiotic interface is the mechanism and set of rules that sustain the relationships between symbiotic units. Its function and structure determine the effectiveness of the symbiotic system. Support mechanisms ensure the supply of resources and maintain the stability of the system's activities, while evaluation mechanisms serve to integrate standards and ensure that the system develops in an orderly manner toward its set goals.

Human resources and financial support are critical for the continued development of cooperation. As the flagship project for educational cooperation between emerging countries, the BRICS Network University's management structure consists of three main bodies: the International Governing Board (IGB), responsible for the development and performance evaluation of the network university's activities; the National Coordination Committee (NCC), which ensures the national-level operation and management of the university; and the International Thematic Groups (ITGs), which provide educational support in priority areas of cooperation (BRICS Information Sharing & Exchanging Platform, 2015). Furthermore, the rotational leadership system of BRICS ensures that each member country has an opportunity to play a role in the management and decision-making of the network university, enhancing the inclusivity and effectiveness of cooperation. Regarding financial support, BRICS provide funding to the universities and students involved in the BRICS Network University through various means (Li, 2018). Brazil and South Africa provide direct funding to institutions, Russia subsidizes students through a scholarship mechanism, and India allocates funding through the University Grants Commission. The Chinese government primarily supports international students through scholarships, which have been further extended by local governments. For instance, the BRICS Summer Program organized by Fudan University's BRICS Studies Center is primarily funded by the Shanghai Municipal Education Commission.

Vocational Skill Certification Mechanism. In the area of qualification certification, BRICS have made some progress in skills-level certification. As early as 2018, the Chinese and Russian skill groups proposed the "Skill Passport Program", which awards skilled workers with a skill passport that certifies specific skill levels. This initiative was first implemented in the two countries and has since been expanded to all BRICS members. In 2024, the BRICS Skills Standardization Committee plans to further develop and refine the skill passport certification system, involving experts from various industries to define skill certification standards and issue skill passports in multiple sectors. This will provide BRICS nations' skilled workforce with more authoritative and transferable certification, allowing students and professionals to move and work freely within BRICS based on internationally recognized credentials.

Politically and Economically Driven Symbiotic Environment

The symbiotic environment, comprising external factors influencing cooperation between symbiotic units, plays a supportive, maintaining, or constraining role (Thomas & Autio, 2014). As a driving force for educational cooperation, it primarily includes political and economic factors.

Political stability and policy continuity in BRICS form the foundational prerequisites for educational cooperation. Firstly, BRICS upholds the spirit of "openness, inclusiveness, and win-win cooperation," strengthening political mutual trust through leaders' summits and ministerial meetings. This creates a stable political environment for educational cooperation. On this basis, BRICS actively engages in global governance,

offering "BRICS solutions" to global challenges, contributing "BRICS wisdom" to global reform, and injecting "BRICS strength" into the stability of the world order. These efforts reinforce the international political environment for educational cooperation. Secondly, policy continuity provides a framework for the sustained development of educational cooperation. Declarations from BRICS Education Ministers' meetings reflect governments' insight into new educational demands and forward-looking planning. In higher education, BRICS promotes innovative cooperation models and coordination mechanisms, explores the establishment of academic degree recognition systems and education quality assurance frameworks (5th Meeting of BRICS Ministers of Education, 2017), and strives to reshape global university rankings and quality assessment systems (Valeeva, 2022). In vocational education, as outlined in the BRICS Ministers of Education Declaration (2021), BRICS integrates sustainable development principles, strengthens the integration of education, talent development, industry, and innovation, and collectively advocates for accelerating the digital transformation of education to enhance students' access to high-quality education and improve their learning experiences, thereby building an open, inclusive, and resilient digital education system.

The economic environment of BRICS provides dual support for educational cooperation, offering both external support and internal demand. On one hand, the economic strength of BRICS lays a solid foundation for educational cooperation. In 2023, the total GDP of BRICS accounted for approximately one-third of the global economy (35.7%), enabling steady investments in educational infrastructure, teacher training, research activities, and student funding. This provides strong support for educational development. BRICS recognizes the role of education in driving economic development (Carnoy et al., 2014). In the Fortaleza Declaration, BRICS leaders explicitly stated that education is of strategic importance for sustainable development and inclusive economic growth. Based on this understanding, BRICS pursues coordinated development of education and the economy. On the other hand, their economic environment creates endogenous demand for educational cooperation, shaping talent cultivation. As emerging economies, BRICS share similar economic challenges and urgently require a skilled workforce to drive industrial upgrading and economic growth. This demand has led to heightened attention to vocational education. BRICS is working to enhance vocational skills by establishing "Luban Workshop," implementing the "Skills Passport Program," and organizing bilateral exchanges among vocational institutions, aiming to improve soft skills to meet economic needs. Moreover, BRICS is actively promoting the sharing of vocational education information and resources, improving the accessibility of labor market data, and leveraging labor market intelligence to better align education with economic dynamics, thereby providing students with more targeted knowledge and skills training.

Realistic Challenges in Deepening Educational Cooperation among BRICS

Heterogeneity of Symbiotic Units Leading to Insufficient Cooperation Vitality

The expansion of BRICS has led to significant differences among member countries in political systems, economic development, and historical traditions, resulting in imbalances in educational development. These disparities have exacerbated divergences in values and interests, weakening the overall vitality of educational cooperation. The uneven development of education in BRICS leads to conflicts in educational needs and cooperation directions, increasing the difficulty of collaborative efforts. For instance, Russia's education system is closer to that of developed countries, while China, Brazil, and South Africa are at intermediate levels, and India is relatively lower (Anand et al., 2020). This gap is particularly evident in higher education, where disparities in university

rankings and academic resources are apparent. In the 2025 QS World University Rankings, China has six universities in the global top 100, while Brazil and Russia each have only one. Each country faces specific educational agendas and varying priorities, making it challenging to develop a unified approach to educational cooperation. Moreover, while BRICS have reached a consensus on the overall goals of educational cooperation, differences in value orientations, interests, and perceptions of roles within cooperation platforms directly affect the level of commitment and support each country provides. For example, Russia focuses on attracting international students to enhance the global influence of its higher education system, while other countries prioritize joint research and curriculum development to strengthen innovation capacity and international competitiveness. These differences often result in cooperation remaining at a superficial level, lacking the necessary vitality (Sun & Yang, 2021), with many agendas not being effectively implemented (Khomyakov, 2018).

Limitations of the Symbiotic Models Restricting Deep Cooperation

BRICS educational cooperation largely relies on the intermittent symbiosis model, with continuous and integrated symbiosis models being underdeveloped. This limits the depth and stability of cooperation. For example, the BRICS Summer Program offers short-term cultural exchanges and academic discussions but lacks a long-term follow-up mechanism to deepen collaboration. The COVID-19 pandemic further restricted opportunities for in-depth interaction. Additionally, while programs like the "Vocational Bridges to the World online workshops" and the "Future Career Stars" training camps offer targeted training, their lack of a systematic, long-term cooperation framework has prevented the full integration of vocational education resources within BRICS. Moreover, the continuous symbiosis model within BRICS is characterized by loose and uneven cooperation. Compared to regional educational cooperation between neighboring countries, BRICS educational collaboration remains relatively weak (Khomyakov, 2017). For example, Brazil prioritizes cooperation with Latin American and Portuguese-speaking African countries, while its collaboration with other BRICS is more limited. Similarly, despite South Africa's active promotion of educational cooperation, the number of students from other BRICS studying in South Africa has not significantly increased since its accession (Cheng, 2020).

Imbalance in the Symbiotic Interface Hindering Resource Flow

The support mechanisms for BRICS educational cooperation are weak and insufficient. The BRICS Network University lacks a permanent secretariat or president's office to manage and promote cooperation. The involvement of participants is unstable, with frequent changes in representatives at education minister meetings, making it difficult to establish long-term partnerships and effective communication mechanisms. This leads to uncertainty in decision-making, execution, and evaluation processes, impacting the smooth progress of educational cooperation. Financial support is also insufficient, with limited investment and single sources. Due to differing economic development levels, financial contributions to educational cooperation are uneven, weakening economic foundation of collaboration. For example, Fudan University's BRICS Summer Camp project faces funding shortages, with available funds covering only 20 scholarship slots. The limited overall budget and differences in funding mechanisms for the BRICS Network University further complicate project management (Khomyakov, 2017).

The evaluation mechanism is inadequate, leading to difficulties in recognizing qualifications. Differences in curriculum design, teaching content, and assessment standards make it difficult to establish mutual recognition of academic credits among

BRICS. As a result, students' cross-border learning outcomes often do not lead to a recognized degree or diploma. For example, students jointly trained by the BRICS Network University only receive independent diplomas from partner universities, with no unified degree certification (Kovalev & Shcherbakova, 2019).

Weak Symbiotic Environment Constricting External Support

BRICS face external constraints and internal obstacles in educational cooperation due to geopolitical tensions and growing internal contradictions. Meanwhile, the slowing economic growth and the impact of the COVID-19 pandemic have further complicated economic recovery of BRICS, adversely affecting financial investments in education.

The geopolitical dynamics of BRICS have grown increasingly complex amid tense international relations. Notably, post-expansion, their political inclinations have become more pronounced, adding uncertainty to the external environment for educational cooperation. Moreover, international political events, with ripple effects, not only impact individual members but reshape BRICS' collaborative ecosystem, spilling over into education and dampening students' willingness to study in BRICS nations. Additionally, emerging political rifts have subtly altered inter-member relations, with occasional "BRICS dissonance" discourse. Expansion has inevitably heightened internal divergences, making consensus-building harder amid diversified interests. Existing geopolitical frictions, such as Sino-Indian border tensions, the Saudi-Iran conflict, and Egypt-Ethiopia water disputes, have also weakened collective action capacity.

In recent years, under the combined influence of structural, cyclical, and unexpected factors, the economic growth of the BRICS has continued to slow, facing multiple challenges such as the "middle-income trap" (Chongyang Institute for Financial Studies, 2022). Western scholars have not been short of narratives such as the "fading of BRICS" or the "collapse of BRICS," and even Jim O' Neill, the originator of the BRICS, has expressed disappointment over the slowdown in BRICS economic development (Wade, 2022). The waning economic vitality has constrained the cross-border flow and sharing of educational resources, weakening the financial investment each country can allocate to educational cooperation.

Optimizing the Pathway for Deeper Educational Cooperation among BRICS

The expansion of the BRICS grouping not only demonstrates vast potential for cooperation but also brings new opportunities for educational collaboration. By strengthening the symbiotic units, unleashing cooperation vitality, optimizing cooperative models to increase cooperation's resilience, enhancing the communication interface, and improving the symbiotic environment to foster a cooperative atmosphere, BRICS can further optimize their educational cooperation.

Strengthening Symbiotic Units and Unleashing Cooperation Vitality

Enhancing communication and leveraging synergies are critical for BRICS educational cooperation, especially post-expansion with more Global South members. Priority should be placed on deepening dialogue to identify shared interests: adding an education section to the "BRICS Joint Statistical Manual" or publishing periodic "BRICS Education Reports" would foster understanding of each country's systems and plans, building trust. Existing platforms – BRICS Network University Annual Conference, University Presidents' Forum, Vocational Education Presidents' Forum – should facilitate exchanges on common challenges, enabling strategic alignment to address global education issues, boost competitiveness, reshape rankings, and advance UNESCO's sustainable education goals. Multi-faceted collaboration, involving governmental and

public participation, is key. Members should leverage unique strengths: China, a major driver (Thussu, 2017), can share experiences in higher education quality, vocational education reform, and digital transformation. Hosting the World Vocational and Technical Education Development Conference exemplifies China's role in leading cooperation.

Optimizing the Symbiotic Model to Increase Cooperation's Resilience

Establishing long-term mechanisms and implementing assessments are vital to sustain educational cooperation impact. Short-term projects should integrate enduring frameworks, expanding scope beyond cultural exchanges to include long-term research, with online platforms and mentorship ensuring continuity. Regular evaluations using BRICS Think Tank Council (BTTC) indicators will monitor progress, enhancing transparency and accountability. Supporting joint academic programs and outreach is key. Currently, only one China-Russia bilateral institution exists under BRICS; expanding cross-border degree-granting institutions, with integrated curricula from undergraduate to graduate levels, will cultivate globally competent talent. Incentivizing university participation and enhancing promotion – via optimized multilingual websites with updated information and online consultation (Cheng, 2020) – will strengthen the BRICS education brand and international influence.

Improving the Symbiotic Interface to Facilitate Communication

Strengthening support mechanisms is crucial for stabilizing BRICS educational cooperation. First, human resource capacity should be enhanced: a stable delegation system for Education Ministerial Meetings will mitigate disruptions from personnel changes, while professional management teams trained in BRICS education systems will boost project efficiency. Second, scholarship systems need refinement, including a unified budget framework and a BRICS Educational Cooperation Fund to provide sustained financial support. Diversifying funding sources (government, enterprises, universities) and expanding scholarships, alongside potential BRICS New Development Bank funding for education (UNESCO, 2014), will strengthen stability. Integrating evaluation mechanisms for credential recognition requires establishing higher education accreditation agencies and credential recognition working groups, drawing on UNESCO's Regional Conventions (UNESCO, 2014). Developing a BRICS vocational qualification framework, aligning standards, and creating dialogue platforms with peer reviews will facilitate cross-border recognition, promoting student mobility and skill development.

Enhancing the Resilience of the Symbiotic Environment to Promote Deeper Cooperation

BRICS' expansion demands strengthened institutional building, as existing mechanisms are insufficient for deepening educational cooperation with doubled membership. Enhancing political trust through regular summits, ministerial meetings, and forums will mitigate geopolitical obstacles. Cultivating global-minded youth via Moscow Summer Camps and BRICS Youth Clubs, alongside people-to-people projects, fosters mutual understanding, underpinning educational collaboration. Aligned with BRICS' pragmatic goals, talent cultivation for new industries, particularly the digital economy, is pivotal. Vocational education, critical for economic recovery, requires labor market monitoring stations to share skills data and forecast needs (UNESCO, 2014). Leveraging the Business Council's Skills Development Working Group, vocational education should align curricula with industrial demands, cultivating talent for economic transformation.

Discussion

The analytical framework of symbiosis theory provides a new perspective for understanding educational cooperation among BRICS nations. Compared with educational cooperation in other regions, the symbiotic system of BRICS countries demonstrates unique characteristics as emerging economies. BRICS cooperation combines the flexibility of South-South collaboration with the complexity of political gaming. From a theoretical attribution of real-world challenges, the lack of cooperative vitality caused by the heterogeneity of symbiotic units essentially reflects an "imbalance in symbiotic energy exchange". The dominant symbiotic modes of intermittent and point symbiosis indicate that short-term projects are better suited to accommodate the dynamic changes in member states' interests and demands, while the connectivity between units still requires enhancement. The imbalance in symbiotic interfaces fundamentally manifests as "interface conduction disorders" with the dual absence of guarantee mechanisms and evaluation mechanisms constituting the core obstruction. The weak state of the symbiotic environment stems from the persistent impact of "environmental stress effects" on the symbiotic system, with the dual deterioration of geopolitical and economic ecosystems forming external constraints.

Conclusion

The educational cooperation among BRICS is of great significance in promoting the reform of global education governance and promoting the educational development of member countries. Through the perspective of symbiosis theory, the educational cooperation among BRICS shows a system of macro-micro linkage units, diversified symbiotic models from primary to advanced, symbiotic interfaces that take into account both the process and results of cooperation, and a symbiotic environment driven by both politics and economy. However, the cooperation process also faces realistic constraints such as heterogeneity of symbiotic units, limitations of symbiotic models, imbalance of symbiotic interfaces, and weak symbiotic environments, which lead to problems such as insufficient cooperation vitality, limited in-depth cooperation, obstructed resource flow, and weak external support. In order to deepen the educational cooperation among BRICS, it is necessary to strengthen symbiotic units to release the vitality of cooperation; optimize symbiotic models to increase cooperation stickiness; improve symbiotic interfaces to smooth communication channels; and enhance the resilience of symbiotic environments to create a cooperative atmosphere. Under the new historical opportunity, BRICS should actively respond to challenges, adopt effective strategies, promote educational cooperation to a deeper level and a wider range of fields, and contribute to the construction of a more just and reasonable global education order.

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