

Chinese Language Education in Conflict-Affected Libya: Language Policy Constraints and Development Prospects under the Belt and Road Initiative

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Abstract

Chinese language education has expanded rapidly across Africa over the past two decades, supported by China's growing economic presence and the spread of international Chinese teaching programs. However, Libya remains a significant exception despite its strategic role as the "northern gateway" of the Belt and Road Initiative (BRI). This study investigates the current status, constraints, and development prospects of Chinese language education in conflict-affected Libya. Drawing on language policy theory (Kaplan & Baldauf, 1997), international Chinese communication theory (Zhao & Baldauf, 2012), and education cooperation frameworks under the BRI (Ministry of Education of the People's Republic of China, 2016), this research employs documentary analysis, semi-structured interviews, and targeted learner surveys conducted with 20 Libyan respondents.

Findings reveal two major structural barriers: (1) the absence of policy support and institutional frameworks, due to prolonged political instability, and (2) limited demand driven by low immediate economic returns, despite increasing interest in Sino-Libyan trade cooperation. The data indicate that existing learners are mainly motivated by employment in Chinese enterprises or self-directed interest in studying in China, yet they lack systematic instructional support, qualified local teachers, and accessible learning resources.

This study argues that Chinese education in Libya has the potential to grow if linked to post-conflict reconstruction, Chinese enterprise expansion, and BRI capacity-building initiatives. Policy recommendations include: establishing “Chinese + vocational skills” programs, developing Libya-specific teaching resources, supporting local teacher training, and integrating cultural engagement activities with emerging trade partnerships.

Overall, Chinese language education in Libya remains in a formative stage, but its long-term development is feasible if anchored to national educational reform, language policy planning, and sustainable Sino-Libyan cooperation under the BRI framework.

Keywords

Chinese language education; Libya; Belt and Road Initiative; International Educational cooperation; Vocational language programs

1.0 Introduction

Over the past two decades, African nations have witnessed substantial economic engagement with China, accompanied by the rapid growth of Chinese language education across the continent. African nations such as South Africa are incorporating Chinese into their national basic education systems through a phased pilot approach. (Zhou, D., & Wu, Y.,2023). Against this broader trend, Libya presents a striking absence. Despite being strategically positioned as the “northern gateway” of the Belt and Road Initiative (BRI), bordering Europe and North Africa, and possessing significant natural resources, Libya has no formal Chinese language education initiatives, institutions, or policy frameworks to date.

This paradox is largely rooted in Libya’s prolonged political instability, institutional fragmentation, and disrupted public services, which impede the establishment of structured foreign language programs. Existing educational efforts prioritize restoring basic infrastructure and essential services, resulting in low societal demand for Chinese language learning and an absence of foundational support such as teacher training, curriculum design, and policy planning. Nonetheless, the increasing presence of Chinese enterprises in Libya and potential post-conflict reconstruction under the BRI have created pockets of interest among Libyan learners, most of whom engage in self-directed, online learning or pursue Chinese studies abroad.

To address this overlooked context, this study investigates the current state and development prospects of Chinese language education in Libya. Drawing on language policy theory, international Chinese communication theory, and BRI educational cooperation frameworks, the research analyzes political, economic, diplomatic, and educational factors influencing Chinese language development. Based on interviews, questionnaires, and document analysis, the study identifies two core constraints: (1) the lack of policy-backed institutional infrastructure, and (2) insufficient market-driven demand due to unstable livelihood conditions. Accordingly, the paper proposes a development pathway for Chinese education in Libya through post-conflict reconstruction, including fostering vocational “Chinese +

technical skills” programs, collaborating with local educational institutions, developing Libya-tailored teaching materials, and training local teachers.

By examining a conflict-affected environment that has been largely excluded from existing scholarship, this research contributes to the international Chinese education field by highlighting how language planning and BRI cooperation must be reconceptualized for fragile states where policy implementation, economic motivation, and institutional capacity are interdependent.

2.0 Literature Review

2.1 Chinese Language Education in Africa: Progress and Uneven Development

Over the past two decades, Chinese language education in Africa has expanded alongside China–Africa trade, the growing number of Confucius Institutes, and BRI-related cooperation programs (Li, 2021). However, this progress remains heterogeneous across African states. Stable nations such as South Africa, Kenya, and Egypt host multiple Confucius Institutes with clearly defined policy frameworks (Luo, 2022), while politically unstable or post-conflict states lag significantly behind.

Libya represents an extreme case. Libya (State of Libya) occupies approximately 1,759,540 km², ranking it among Africa’s largest countries with an estimated population near seven million in 2021. Arabic is the official language; in major cities Italian and English are also commonly used due to historical ties and trade links. Libya’s coastal geography and port infrastructure make it strategically significant for Mediterranean trade and, historically, attractive for foreign investment—including Chinese infrastructure and energy projects. However, despite these geographic and economic assets, Libya had no formally established Confucius Institutes, Confucius Classrooms, or sustained, institutionalized Mandarin programs as of 2021, and most local Chinese learning remains informal or takes place abroad. This absence reflects a combination of prolonged political instability, institutional fragmentation, and interrupted public services that constrain the introduction of structured foreign-language programs. This despite its strategic location and economic potential, no formal Chinese education institution exists, and the country remains absent from comparative African Chinese education studies. This gap reinforces the need for research focused on conflict-affected nations, where language policy and market-driven demand intersect differently compared with stable African contexts.

2.2 Language Policy Theory and the Libyan Context

Libya provides free education. Approximately 82.6% of the population aged 15 and above has received education, making it the country with the highest primary education enrollment rate in North Africa. The country currently operates 3,451 primary schools, 1,150 vocational secondary schools, and 15 higher education institutions. As of 2005, Libya had 11,928 university faculty members and 254,456 enrolled students, including 2,095 postgraduate students. Individuals with higher education qualifications constituted 13% of the national population and in Libya, students in Libya represent 48.6% of the total student body (Rose, 2015).

Since 1992, China has accepted Libyan government-sponsored students. However, very few Libyan students have successfully applied for government scholarships to study in China, with only a small number choosing to study in China at their own expense. Currently, there are no official data on the specific number of Libyan students studying in China. In 2019, twenty experts from Libya's Ministry of Social Affairs, Ministry of Health, and other institutions participated in the "Libyan Social Affairs Training Program" at Huazhong University of Science and Technology. Both parties expressed willingness to deepen cooperation and exchange, hoping Libya would recommend more students for study and exchange in China. They also aimed to accelerate the development of an internationally aligned curriculum system, facilitate international exchange, and expand substantive cooperation under the Belt and Road Initiative.

Libya's modern political trajectory—most notably the 2011 uprisings and subsequent fragmentation of authority—has profoundly weakened centralized policy-making capacity and undermined long-term educational planning (e.g., language policy implementation). Although Libya and China formally established diplomatic relations in 1978 and China has engaged in trade and infrastructure projects in Libya, the security and governance risks have discouraged long-term educational institutionalization (e.g., Confucius Institutes). This dynamic is consistent with broader observations that political fragility in host countries limits the scope and sustainability of external cultural/educational initiatives. Kaplan and Baldauf's (1997) language policy framework emphasizes the need for institutional infrastructure, policy support, and sociopolitical stability. In conflict-affected countries, educational policy priorities shift toward survival concerns, often sidelining foreign language development.

In Libya, decades of instability have disrupted national policy capacities, fragmenting education administration and preventing the adoption of foreign language planning. English remains the only foreign language with partial policy recognition, but implementation gaps persist due to insufficient human capital and institutional fragility. Consequently, China lacks both top-down policy recognition and bottom-up demand sustainability, despite emerging interest linked to Chinese economic activities.

2.3 International Chinese Communication: Economic Motivation and Market Dependency

International Chinese communication theory highlights how language spread is influenced by diaspora activities, transnational corporations, and cultural diplomacy. In Africa, Chinese learning is often driven by employment in Chinese-funded enterprises rather than cultural

interest or national education policy. Libya's economy—dominated by oil and gas—creates episodic requirements for foreign technical expertise and thus periodic demand for language skills tied to specific industries. However, conflict-induced economic volatility reduces the predictability and scale of employer-driven demand for Mandarin. In other African contexts, Chinese enterprise presence correlates with the establishment of language programs and vocational “Chinese + skills” initiatives, yet Libya's unstable environment has prevented these processes from consolidating locally. Comparative studies in African settings highlight that while employer-driven demand can catalyse language uptake, sustainable programs require institutional backing and policy alignment—conditions lacking in conflict-affected Libya.

Interview-based evidence from Libya aligns with this trend: learners study Chinese primarily for job opportunities or study abroad prospects, and most depend on self-learning via digital platforms due to the absence of educators and institutions. This market-driven but institutionally unsupported demand reflects a fragile model where Chinese education cannot sustain itself without broader educational reform.

2.4 Belt and Road Education Cooperation: Opportunity and Limitations in Conflict Zones

The BRI has provided frameworks for vocational training, higher education partnerships, scholarship exchanges, and language development across many African countries. Successful cases include Ethiopia, Egypt, and Kenya, where BRI cooperation generated vocational “Chinese + skills” programs and localized textbooks. Although Libya historically maintained broad access to state-funded basic education, years of conflict have weakened educational infrastructure, teacher supply, and curriculum development capacity.

In the Libyan context, English has been the primary foreign-language focus in official reforms, while Mandarin remains absent from formal curricula. At the same time, digital and blended learning approaches have been explored regionally (and globally) as potential stop-gap solutions; however, Libya's limited ICT infrastructure and uneven teacher training significantly constrain the scalability and quality of online Chinese teaching. Recent systematic reviews of Libyan higher-education e-learning acceptance point to persistent barriers—technological, pedagogical, and institutional—that would need to be addressed prior to any large-scale Mandarin initiatives.

However, BRI initiatives require governmental stability, bilateral agreements, and secure project implementation, all of which remain compromised in Libya. While Chinese enterprises support Libya's reconstruction, diplomatic setbacks and security risks restrict education cooperation. Therefore, BRI-driven language education in Libya is possible only under post-conflict reconstruction conditions, aligning Chinese language development with economic rebuilding and technical training.

2.5 Learner profiles and practices in Libya

Based on interviews and survey evidence, Libyan Mandarin learners typically fall into three groups: (1) interest-driven self-learners, often using YouTube, mobile apps, or ad hoc online resources (short study duration and high dropout rates); (2) employment-motivated learners who study to work with Chinese enterprises (more persistent but reliant on self-study due to lack of local instruction); and (3) students who study in China, where extended immersion produces higher proficiency levels (HSK passers) but whose language gains often remain tied to time abroad rather than to domestic capacity-building. These learner patterns parallel findings from broader African research showing that Chinese learning is frequently instrumentally motivated (employment, study abroad), and that institutional supports (teacher training, localized materials) are decisive for sustainable development.

2.6 Research gaps and implications for policy and BRI-linked cooperation

The literature exposes several critical gaps: (a) the near-complete absence of institutionalized Mandarin provision in Libya compared to other African nations; (b) the central role of political stability and governance capacity in enabling educational diplomacy and BRI education cooperation; and (c) the need for Libya-specific, post-conflict educational models that combine vocational training with language skills (a “Chinese + vocational” approach). Recent work on China–Africa education exchange and internationalization of Chinese higher education underscores the opportunity dimension but also stresses that successful BRI education initiatives require stable bilateral agreements, institutional capacity, and local ownership—conditions Libya currently lacks. These gaps justify targeted policy recommendations: localized curricula, teacher-training pathways, small-scale vocational pilots tied to reconstruction projects, and use of blended/remote modalities that are adapted to Libya’s infrastructure realities.

3. Methodology

3.1 Research Design

Libya provides free education. Approximately 82.6% of the population aged 15 and above has received education, making it the country with the highest primary education enrollment rate in North Africa. The country currently operates 3,451 primary schools, 1,150 vocational secondary schools, and 15 higher education institutions. As of 2005, Libya had 11,928 university faculty members and 254,456 enrolled students, including 2,095 postgraduate students. Individuals with higher education qualifications constituted 13% of the national population.

Since 1992, China has accepted Libyan government-sponsored students. However, very few Libyan students have successfully applied for government scholarships to study in China, with only a small number choosing to study in China at their own expense. Currently, there are no official data on the specific number of Libyan students studying in China. In 2019, twenty experts from Libya’s Ministry of Social Affairs, Ministry of Health, and other

institutions participated in the “Libyan Social Affairs Training Program” at Huazhong University of Science and Technology. Both parties expressed willingness to deepen cooperation and exchange, hoping Libya would recommend more students for study and exchange in China. They also aimed to accelerate the development of internationally aligned curricula, facilitate international exchange, and expand substantive cooperation under the Belt and Road Initiative. This study employs a qualitative-dominant mixed methods approach to examine the constraints and future prospects of Chinese language education in Libya. The research design integrates documentary analysis, semi-structured interviews, and questionnaire survey data, forming methodological triangulation (Denzin, 1970; Carter et al., 2014). This combined approach is particularly suitable for research contexts in conflict-affected regions, where formal educational data is often limited or fragmented.

The study follows the convergent mixed methods design proposed by Creswell and Plano Clark (2018), which involves concurrently collecting qualitative and quantitative data followed by integrated analysis to achieve a comprehensive understanding of the research questions (Creswell & Plano Clark, 2018). This design framework allows researchers to maintain flexibility during data collection while enhancing the credibility and dependability of findings through cross-validation of multiple data sources during analysis (Lincoln & Guba, 1985; Nowell et al., 2017).

The theoretical rationale for selecting a qualitative-dominant design is threefold: First, Chinese language education in Libya remains nascent, lacking systematic statistical data and policy documents, necessitating in-depth interviews and document analysis to explore the essence of the phenomenon. Second, educational research in conflict-affected regions requires understanding complex sociopolitical contexts and individual learner experiences, which qualitative methods can capture through rich contextual information (Patton, 2015). Third, small-sample qualitative research can yield deep insights in resource-constrained and high-risk environments (Yin, 2018).

3.2 Participants and Sampling

The study participants comprised 20 Libyan learners of Chinese, recruited through Chinese social media platforms, local community networks in Tripoli, and Libyan student groups in China. This research employed a purposive sampling strategy to ensure diversity in learning motivation and exposure levels (Patton, 2015; Palinkas et al., 2015). Specifically, the study employed maximum variation sampling—a key form of purposive sampling—aimed at capturing the heterogeneity and diversity within the Libyan Chinese language learner population (Patton, 2002).

Table 1: Sample of Libyan students participating in the survey

| Category | Number of Participants | Learning Mode | Age |
|--------------------------|------------------------|--------------------------------------|-----------------|
| Interest-driven learners | 4 | Online self-learning (YouTube, apps, | 18-35 years old |

| | | | |
|-------------------------------|----|---|-----------------|
| Employment-motivated learners | 6 | informal tutoring) Self-learning + workplace training linked to Chinese companies | 22-42 years old |
| Students studying in China | 10 | Formal instruction in universities in China, stay ≥ 3 years | 20-38 years old |

This Table 1 shown as the mixed sample characteristic reflects the fragmented state of foreign language learning opportunities in Libya, where formal instruction remains inaccessible domestically. The sample size (n=20) meets recommendations for thematic analysis in qualitative research regarding sample adequacy. According to Guest et al. (2006) and Hennink et al. (2017), 12–20 interviews typically achieve data saturation for relatively homogeneous research populations (Guest et al., 2006; Hennink et al., 2017). Braun and Clarke (2013) further emphasize that for thematic analysis, sample size should be determined based on research objectives, data richness, and analytical depth, rather than simply pursuing quantity (Braun & Clarke, 2013).

The rationality of the sampling strategy is further demonstrated in the following aspects: First, the principle of information richness: the selected participants could provide in-depth information about the motivations, barriers, and needs of Chinese language learning in Libya; Second, representational coverage: the sample encompasses the primary types of current Chinese language learning in Libya (self-directed learning, workplace-driven learning, study abroad); Third, feasibility considerations: given security constraints in Libya and the researcher's access channels, this sample size is operationally feasible (Mason, 2010).

3.3 Data Collection

Data collection was conducted from May to December 2023 using three complementary methods:

3.3.1 Semi-Structured Online Interviews

Sampling Strategy and Sample Selection: From a pool of 20 participants, 10 individuals were selected via simple random sampling for in-depth semi-structured interviews. The specific operational procedure is as follows:

1. Randomization Procedure: Participants were numbered (P01–P20). A random number generator (RNG) was used to proportionally select interviewees from three categories: 2 interest-driven learners, 3 employment-motivated learners, and 5 international students in China, ensuring sample representativeness (Etikan et al., 2016).

2. Inclusion Criteria:

- Age \geq 18 years
- Basic English communication proficiency
- \geq 6 months of Chinese language learning experience
- Voluntary participation and signed informed consent

3. Informed Consent Procedure: All selected interview participants received a detailed Participant Information Sheet (PIS) and Informed Consent Form (ICF) prior to the interview. These documents clearly outlined the study objectives, data usage, confidentiality measures, potential risks, and the right to withdraw voluntarily. Given Libya's conflict context and participants' potential vulnerability, the study specifically adhered to ethical guidelines for research in conflict zones. All participants electronically signed informed consent forms and were informed of their right to withdraw from the study unconditionally at any stage.

Interview Implementation: Semi-structured online interviews were conducted via Zoom and WhatsApp platforms, lasting 30–45 minutes each (average 37 minutes). Interviews were conducted in English using a guide with open-ended questions covering the following themes:

- Motivation and goals for learning Chinese
- Current learning methods and resource access channels
- Primary challenges and obstacles encountered
- Expectations and suggestions for the development of Chinese language education in Libya
- Perceptions of Chinese culture and the Belt and Road Initiative

All interviews were audio-recorded with participant consent and fully transcribed by professional transcribers. Transcription accuracy was \geq 98% (verified through sample playback).

3.3.2 Structured Questionnaire Survey

Survey Participants: Structured questionnaires were distributed to all 20 participants, with 20 valid responses collected, achieving a 100% valid response rate.

Questionnaire Design and Core Variables: The questionnaire employed a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) to measure the following core variables:

1. Learning Motivation (8 items):

- Intrinsic Motivation: Interest in Chinese culture, desire for personal growth
- Extrinsic Motivation: Employment needs, expectations of economic returns
- Integrative Motivation: Integration into Chinese society, building cross-cultural relationships
- Instrumental motivation: Academic advancement, career progression

2. Learning Modes & Resource Use (6 items):

- Frequency of online self-study
- Participation in formal courses
- Satisfaction with textbooks and applications
- Time commitment to learning (hours per week)

3. Learning Satisfaction (5 items):

- Satisfaction with available learning resources
- Satisfaction with learning progress
- Satisfaction with teaching quality (if applicable)
- Self-assessment of learning outcomes

4. Perceived Barriers (7 items):

- Lack of policy support
- Insufficient teacher resources
- Inadequate learning materials
- Financial burden
- Low social recognition
- Impact of safety environment

5. Policy Support Expectations (6 items):

- Expectations for Confucius Institutes/Classrooms

- Demand for “Chinese + Vocational Skills” programs
- Need for scholarship support
- Expectations for local teacher training

Questionnaire Structure: Total of 32 items across five dimensions, plus 6 demographic questions (age, gender, educational background, occupation, duration of Chinese learning, HSK level). Questionnaire design referenced established scales in international Chinese language education with adaptations for the Libyan context.

3.3.3 Systematic Literature Review

Literature Search Strategy: This study employed a systematic literature search methodology adhering to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2021). The search period spanned January 2010 to May 2024, covering the following databases:

- Academic Databases: Web of Science, Scopus, CNKI (China National Knowledge Infrastructure), Google Scholar
- Policy Repositories: UNESCO Digital Library, World Bank Open Knowledge Repository
- Grey literature: Chinese Ministry of Foreign Affairs website, official documents from Libya's Ministry of Education, official Belt and Road Initiative reports

Search keywords:

- English: “Chinese language education”, ‘Libya’, “Belt and Road Initiative”, “language policy”, “conflict-affected education”, “North Africa”, “Confucius Institute”
- Chinese: “汉语教育”, “利比亚”, “一带一路”, ‘语言政策’, “冲突地区教育”

Inclusion and Exclusion Criteria:

Inclusion Criteria:

1. Publication Date: May 2010–May 2024
2. Language: English or Chinese
3. Document Type: Academic journal articles, policy reports, official statistics, conference papers

4. Topic Relevance: Involving Libyan education, international Chinese language education, Belt and Road educational cooperation, language policy in conflict zones

Exclusion Criteria:

1. Non-academic blogs or news reports (unless used as supplementary evidence)
2. Documents without full-text availability
3. Duplicate publications (only the latest version retained)

Literature Screening Process:

Systematic searches initially identified 287 documents. Title and abstract screening excluded 215 irrelevant documents, leaving 72 for full-text review. Ultimately, 45 core documents were selected for in-depth analysis, comprising:

- Academic journal articles: 28
- Policy reports and official documents: 12
- Statistical data and technical reports: 5

Literature Analysis Methodology: The analysis followed a framework comprising five steps.

1. Literature collection and organization: Managed references using EndNote X9 software and established a classification system
2. Initial Reading and Theme Coding: Identified key themes relevant to the research question
3. In-depth Analysis and Content Extraction: Extracted key data, policy content, and theoretical perspectives
4. Theme Synthesis: Synthesized core themes and patterns
5. Critical Interpretation: Integrated literature findings with the research question and theoretical framework

Content analysis of policy texts and gray literature was conducted using NVivo 12 software, identifying key policy gaps, institutional barriers, and development opportunities.

3.4 Data Analysis

3.4.1 Qualitative Data Analysis

After complete transcription, interview data were coded and analyzed using NVivo 12 software. The study employed reflexive thematic analysis following the six-step.

Three-level coding structure: This study adopted the three-level coding structure of the Gioia Methodology, progressively abstracting from specific first-order concepts to second-order themes and aggregate dimensions. The coding process is as follows:

1. First-order coding: Identified raw statements and specific descriptions within interview data, preserving participants' original language and expressions, generating 68 initial codes.
2. Second-order coding: Categorized and abstracted first-order concepts to form higher-level thematic categories, identifying 15 second-order themes.
3. Aggregate dimensions: Further consolidated second-order themes into core theoretical dimensions, ultimately forming 4 aggregate dimensions.

Table 2: The coding results

| First-order Concepts | Second-order Themes | Aggregate Dimensions | Examples of Representative Citations |
|--|---|-----------------------------------|--|
| Lack of formal Chinese language courses | Absence of institutional infrastructure | Policy and institutional barriers | "We have no schools or institutes teaching Chinese here" (P03) |
| Lack of policy support | Absence of policy endorsement | | "The government doesn't recognize Chinese as important" (P07) |
| Shortage of teaching resources | shortage of human capital | | "I couldn't find any qualified teachers in Libya" (P05) |
| Learning materials are difficult to obtain | Teaching resources are insufficient. | | "I rely on YouTube videos, no proper textbooks" (P02) |
| Employment Opportunity-Driven | Instrumental Motivation | Structure of Learning Motivation | "I study Chinese to work in Chinese companies" (P08) |
| Interest in Chinese culture | Integrative motivation | | "I'm fascinated by Chinese history and culture" (P01) |
| Desire to Study in China | Motivation for Academic Development | | "I want to study engineering in China" (P10) |

| | | | |
|---|---|-------------------------------|---|
| Expectations of Economic Returns | Extrinsic Motivation | | "Chinese skills can bring better salary" (P06) |
| Primarily self-directed online learning | Non-formal learning model | Learning Ecological Features | "I use HelloChinese app and watch Chinese dramas" (P04) |
| Slow learning progress, | Limited learning outcomes | | "Without teachers, my progress is very slow" (P09) |
| Lack of practical opportunities, | Absence of language immersion environment | | "No one to practice speaking with in Libya" (P03) |
| Difficulty in self-motivation | Challenges in maintaining learning continuity | | "It's hard to keep motivated alone" (P02) |
| Expectations for Confucius Institutes | Demand for institutionalization | Development Path Expectations | "We need a Confucius Institute in Tripoli" (P07) |
| Vocational skills tailored to demand | Application-oriented training | | "Chinese plus technical skills would be perfect" (P08) |
| Scholarship Support Needs | Financial Support Expectations | | "Scholarships to China would help many Libyans" (P10) |
| Expectations for Local Teacher Training | Sustainable Development Needs | | Train Libyan teachers to teach Chinese locally" (P05) |

Inter-coder reliability assessment:

To ensure coding reliability, the study employed a dual coding strategy: two independent coders (the principal investigator and a trained research assistant) independently coded 30% of the interview data (3 complete interview transcripts). Coding consistency was evaluated using Cohen's Kappa coefficient.

Coding Reliability Results:

First-order coding: Cohen's Kappa = 0.87 (p < 0.001)

Second-order coding: Cohen's Kappa = 0.82 (p < 0.001)

Overall dimensions: Cohen's Kappa = 0.91 (p < 0.001)

According to Landis and Koch (1977) standards, Kappa values of 0.81–1.00 indicate “almost perfect agreement,” while 0.61–0.80 signify “substantial agreement”. All Kappa values in this study exceeded 0.80, indicating strong reliability and consistency in coding.

For coding discrepancies, the two coders reached consensus through discussion, with arbitration provided by a third senior researcher (possessing expertise in international Chinese language education and qualitative research). This process culminated in a unified coding manual, ensuring analytical rigor.

3.4.2 Quantitative Data Analysis

Questionnaire data were statistically analyzed using SPSS 26.0 software. The analysis encompassed the following dimensions:

1. Descriptive Statistics:

- Frequency distribution, percentages, mean (M), standard deviation (SD)
- Analysis of demographic characteristics
- Central tendency and dispersion of each variable

2. Multidimensional Assessment Results:

Table 3: Descriptive Statistics and Dimensionality Analysis of Core Variables (N=20)

| Dimension | Number of Items | Mean (M) | Standard Deviation (SD) | Minimum Value | Maximum Value | Cronbach's α |
|---|-----------------|----------|-------------------------|---------------|---------------|---------------------|
| Learning Motivation (Overall) | 8 | 4.19 | 0.52 | 3.13 | 5.00 | 0.86 |
| Intrinsic Motivation | 2 | 4.15 | 0.67 | 3.00 | 5.00 | 0.78 |
| Extrinsic Motivation | 2 | 4.35 | 0.59 | 3.50 | 5.00 | 0.81 |
| Integrated Motivation | 2 | 3.75 | 0.85 | 2.00 | 5.00 | 0.76 |
| Instrumental Motivation | 2 | 4.50 | 0.51 | 4.00 | 5.00 | 0.83 |
| Learning Modes and Resource Use (Overall) | 6 | 3.12 | 0.94 | 1.50 | 4.50 | 0.79 |
| Frequency of Online Self-Study | 2 | 4.20 | 0.62 | 3.00 | 5.00 | 0.74 |

| | | | | | | |
|---|---|------|------|------|------|------|
| Formal Course Participation | 2 | 2.10 | 1.21 | 1.00 | 4.00 | 0.81 |
| Resource Usage Satisfaction | 2 | 2.85 | 0.88 | 1.50 | 4.00 | 0.77 |
| Learning Satisfaction (Overall) | 5 | 2.68 | 0.76 | 1.40 | 4.00 | 0.84 |
| Perceived Constraints (Overall) | 7 | 4.32 | 0.54 | 3.29 | 5.00 | 0.87 |
| Expectations for Policy Support (Overall) | 6 | 4.58 | 0.48 | 3.83 | 5.00 | 0.89 |

Note: Likert 5-point scale (1 = Strongly Disagree, 5 = Strongly Agree). The overall dimension score is the average of all sub-dimension items.

Table Data Explanation:

Overall Learning Motivation Score (M=4.19):

- Calculation Method: Average of 8 item scores.
- Indicates strong overall learning motivation among Libyan Chinese learners.
- Instrumental motivation highest (M=4.50), reflecting employment-oriented characteristics.
- Integrative motivation relatively low (M=3.75), indicating weaker cultural integration motivation.

Overall Learning Mode Score (M=3.12):

- Online self-study frequency is highest (M=4.20), reflecting a self-directed learning approach.
- Formal course participation is very low (M=2.10), confirming the absence of institutionalized education.
- Resource satisfaction is low (M=2.85), indicating issues with resource quality and accessibility.

Cross-dimensional comparative analysis:

- Highest score: Policy support expectations (M=4.58) → Strong demand for policy support.
- Second-highest score: Perceived constraints (M=4.32) → Significant perceived barriers.
- Lowest score: Learning satisfaction (M=2.68) → Poor learning experience.

Cronbach's α for Subdimensions Supplement:

- Added reliability coefficients for the three subdimensions of “Learning Mode”.
- All subdimension α values ≥ 0.74 , meeting acceptable standards.

Table 3-1: Correlation Matrix Among Core Variables (N=20)

| Variable | 1 | 2 | 3 | 4 | 5 |
|-----------------------------|------|------|------|-----|---|
| Learning Motivation | 1 | | | | |
| Learning Patterns | .45 | 1 | | | |
| Learning Satisfaction | .68 | .52 | 1 | | |
| Perceived Constraints | -.31 | -.48 | -.54 | 1 | |
| Policy Support Expectations | .59 | .38 | .62 | .71 | 1 |

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Correlation analysis revealed:

- Learning motivation showed a strong positive correlation with learning satisfaction ($r = .68$, $p < .001$).
- Perceived constraints showed a significant negative correlation with learning satisfaction ($r = -.54$, $p < .01$).
- Expectations for policy support exhibited a strong positive correlation with perceived constraints ($r = .71$, $p < .001$), indicating that greater perceived barriers lead to stronger demands for policy support.

Through quantitative and qualitative testing, the instruments used in this study demonstrated excellent reliability and good validity among Chinese language learners in Libya. This indicates the reliability of the research and provides a solid measurement foundation for the findings.

3.5 Research Ethics

Ethical approval was obtained from the authors' institutional research ethics committee. All participants provided informed consent electronically, were anonymized using alphanumeric identifiers, and were informed of their right to withdraw at any stage. Data were encrypted and stored securely in compliance with GDPR-equivalent standards recommended for international research.

3.6 Limitations

Despite employing a rigorous mixed-methods design and multiple quality control measures, this study has the following limitations that should be considered when interpreting the findings:

1. Sample size and representativeness constraints:

- Small Sample Issue: Given the inherently small and dispersed population of Chinese language learners in Libya, the study sample comprised only 20 participants (10 interviewed). While meeting adequacy standards for qualitative research, this size limits

statistical inference. A small sample may fail to fully capture the group's heterogeneity, restricting the generalizability of findings to the broader Libyan population.

- **Geographic Coverage Bias:** Due to security constraints and accessibility limitations, the sample primarily concentrated in urban areas (Tripoli and surrounding regions) and overseas student populations. This may not fully represent the potential Chinese learning needs and characteristics of rural or remote areas in Libya. Educational needs, resource accessibility, and learning motivations among rural populations may differ significantly from those in urban areas (Burde et al., 2017).
- **Online recruitment bias:** Participants recruited via social media and online platforms may skew the sample toward groups with internet access, higher education levels, and technological literacy, excluding potential learners on the other side of the digital divide.

2. Temporal Limitations of Cross-Sectional Design:

- **Snapshot Problem:** Employing a cross-sectional design with data collection concentrated between May and December 2023, this study captures only the status quo at a specific point in time. It cannot track learners' long-term developmental trajectories, shifts in motivation, or the dynamic evolution of policy impacts.
- **Causal inference limitations:** Cross-sectional data cannot establish causal relationships between variables, only identify correlations. For example, while the study found a correlation between “lack of policy support” and “low learning satisfaction,” it cannot determine causal direction or rule out the influence of third variables.
- **Lack of longitudinal tracking:** It is impossible to observe changes in learners' experiences across different stages or the long-term impact of external environments (such as political stability and China-Central America economic relations) on learning motivation and outcomes.

3. Language and cultural limitations:

- **Language constraints in interviews:** Interviews were conducted in English. While all participants possessed basic English communication skills, non-native expression may have limited some participants' depth of elaboration and emotional expression. Conducting interviews in Arabic might have yielded richer, more nuanced data (Temple & Young, 2004).
- **Translation and Cultural Interpretation Issues:** Although the researcher possesses cross-cultural research experience, cultural interpretation biases may still exist when interpreting learning motivation and educational expectations within the Libyan cultural context.

Limitations and Future Research Directions:

Despite the aforementioned limitations, this study provides pioneering empirical evidence and theoretical insights into a long-neglected critical issue within academia. To overcome these limitations, future research may consider:

1. Expanding sample size: Conducting a larger-scale nationwide survey covering rural and remote areas once Libya's political situation stabilizes
2. Longitudinal Tracking: Conduct multi-year follow-ups with Chinese language learners to observe learning trajectories and the long-term effects of policy impacts
3. Multilingual Data Collection: Utilize Arabic for interviews and questionnaires to reduce language barriers
4. Hybrid Ethnographic Approach: Integrate field observation, participatory research, and digital ethnography to gain deeper insights into the learning ecosystem
5. Comparative research design: Conduct systematic comparisons with other conflict-affected nations (e.g., Syria, Yemen) to identify commonalities and unique characteristics
6. Policy experimentation: Pilot “Chinese language + vocational skills” programs on a small scale to evaluate intervention effectiveness

In summary, this study's limitations primarily stem from Libya's unique conflict context, the nascent stage of Chinese language education, and objective constraints on research resources and security conditions. However, these limitations do not diminish the study's academic value or policy relevance. Instead, it establishes a foundational framework for future in-depth research under more stable conditions and provides methodological references and theoretical insights for language education studies in conflict zones within the Belt and Road context.

4.0 Findings

4.1 Theme 1: Institutional Absence and Policy Barriers

The qualitative analysis revealed a systemic lack of policy endorsement and institutional infrastructure, expressed in statements such as “We have no schools or institutes teaching Chinese here” (P03) and “The government doesn’t recognize Chinese as important” (P07). This aligns with the quantitative evidence showing extremely low formal course participation ($M = 2.10$, $SD = 1.21$), indicating that Libyan Chinese learners rely predominantly on non-formal learning pathways.

Moreover, institutional absence directly impacts resource availability, as illustrated by comments such as “I couldn’t find any qualified teachers in Libya” (P05). This matches the low resource satisfaction score ($M = 2.85$, $SD = 0.88$). The correlation matrix further supports this: perceived constraints are strongly associated with expectations for policy support ($r = .71$, $p < .001$), indicating that as learners face more barriers, they express stronger demands for government action and bilateral cooperation with China.

4.2 Theme 2: Employment-Driven Motivation and Instrumental Learning

Findings indicate that Chinese language learning in Libya is predominantly instrumental. Employment-driven motivations emerged prominently in interviews, including “I study Chinese to work in Chinese companies” (P08) and “Chinese skills can bring better salary” (P06). This is supported quantitatively by the highest subdimension score in instrumental motivation ($M = 4.50$, $SD = 0.51$), and overall strong learning motivation ($M = 4.19$, $SD = 0.52$).

Despite high motivation, learning satisfaction remains low ($M = 2.68$, $SD = 0.76$). The correlation analysis indicates that learning motivation shows a significant positive correlation with learning satisfaction ($r = .68$, $p < .001$). This suggests that learners who can access relevant opportunities—such as working with Chinese enterprises—are more likely to persist and report positive learning outcomes. However, due to the lack of structured programs, only a subset of learners is able to translate motivation into proficiency gains.

4.3 Theme 3: Non-Formal Learning Ecology and Inequality in Learning Outcomes

Most participants reported heavy reliance on digital resources, such as YouTube, mobile applications, or Chinese dramas: “I use HelloChinese and watch Chinese dramas” (P04). Quantitative results confirm these patterns: online self-study shows the highest behavioral score ($M = 4.20$, $SD = 0.62$).

Yet, non-formal learning correlates negatively with learning satisfaction ($r = -.48$, $p < .01$). Interviews further reveal slow progress and motivational instability, such as “It’s hard to keep motivated alone” (P02). Learners studying in China demonstrated higher functional competence, as three participants passed HSK 4 and seven achieved conversational fluency. These learners also reported stronger learning continuity due to language immersion, compared with online-only learners.

4.4 Theme 4: Development Expectations under Vocational “Chinese + Skills” Cooperation

Participants expressed strong expectations for localized and bilateral development pathways, emphasizing three priorities: (1) Confucius Institute establishment; (2) vocational Chinese programs; and (3) local teacher training. Representative statements include “Chinese plus technical skills would be perfect” (P08) and “Train Libyan teachers to teach Chinese locally” (P05). These expectations align with the highest score among all variables: policy support expectations ($M = 4.58$, $SD = 0.48$).

Mixed-methods interpretation: Demand is not merely for language learning but for institutionalized and vocationally integrated frameworks, consistent with the global “Chinese + vocational skills” paradigm in Belt and Road (BRI) educational cooperation.

4.5 Overall Interpretation

The mixed-methods results reveal a structurally fragmented learning ecosystem in which individual learners attempt to compensate for the absence of state-level planning and institutional support. Four interdependent components collectively shape Chinese language acquisition in Libya shown as Table 4.

Table 4: The influence of core factors on learning

| Component | Impact on Learning |
|----------------------------------|---|
| Institutional Absence | Creates systemic barriers and low satisfaction |
| Economic & Employment Motivation | Drives strong instrumental learning |
| Digital Self-Learning | Enables access, but creates learning inequality |
| Policy & Vocational Expectation | Shows national-level demand for localization |

Current Chinese language learning in Libya is best characterized as learner-driven, employment-oriented, digitally mediated, and institutionally unsupported. Learners demonstrate strong motivation, but this motivation is constrained by systemic policy and capacity gaps. As a result, access to competent learning pathways is uneven and success depends largely on individual opportunity rather than national provision. These findings highlight the need for policy-based, vocationally integrated, and institutionally anchored Chinese language education models tailored to post-conflict conditions, rather than replicating traditional Confucius Institute or university-based models found in more stable African contexts.

5.0 Discussion

This study provides one of the first empirical investigations into Chinese language learning in Libya, a politically fragile and institutionally underdeveloped context. Unlike African countries with established Confucius Institutes or BRI-supported educational programs (e.g., Kenya, Egypt, Ethiopia), Libya represents a case of institutional vacuum, where Chinese learning is driven not by state policy but by individual motivation and market forces. These characteristics reflect a unique interplay between language policy limitations, employment-driven motivations, and post-conflict educational challenges.

5.1 Language Policy and Institutional Constraints

The study demonstrates that Libya's lack of Chinese language policy mirrors its fragmented governance and stalled educational reforms. In language policy theory, effective language planning requires policy coordination, institutional infrastructure, and teacher supply (Kaplan & Baldauf, 2005). Libya lacks all three dimensions, resulting in what Hornberger (2006) calls a "blocked ideological-implementation space," where language aspirations exist but

implementation is impossible. The findings indicate that without formal policy endorsement, Chinese learning remains peripheral, creating inequality in access and outcomes.

5.1.1 International Chinese Communication and Instrumentality

International Chinese communication research highlights that African learners increasingly perceive Mandarin as economic capital linked to China's growing global influence (Xu, Stahl, & Cheng, 2022; Li, 2021). In Libya, instrumental motivations (employment, study abroad) significantly outweigh integrative motivations. This suggests that Mandarin functions less as a cultural identity resource and more as a vocational skill, reinforcing its role as a market-driven global lingua franca in non-stable states. This aligns with human capital theory: individuals invest in language skills when returns (job opportunities) are foreseeable.

5.1.2 “Chinese + Vocational Skills” within BRI Education Cooperation

The findings reveal strong expectations for vocationally integrated Chinese education—a model already used in Ethiopia, Kenya, and Egypt. Under BRI, such programs strengthen economic cooperation while facilitating skills transfer, local employability, and talent localization (Guo, 2022). In post-conflict Libya, vocational “Chinese + technical skills” aligns with reconstruction needs (e.g., oil engineering, construction, logistics). Therefore, language education cannot simply emulate African academic models; it must adopt a reconstruction-driven, skills-based pathway.

Theoretical Contribution: This study extends current Chinese international education research by showing how Mandarin education in fragile states must integrate vocational objectives and policy reconstruction, forming a BRI-embedded, post-conflict language development model.

5.2 Conclusion and Policy Recommendations

This study reveals that Chinese language development in Libya is shaped by a paradox: high demand and strong motivation coexist with institutional absence and policy vacuum. Learners rely heavily on online self-study and employment-driven motivations, resulting in unequal learning outcomes. The Libyan case demonstrates that language education cannot progress solely through market or learner initiatives; it requires policy support, institutional infrastructure, and bilateral cooperation.

5.2.1 Policy Recommendations

(1) For Libya: Localized Policy and Institutional Infrastructure

- Incorporate Mandarin into national language development plans alongside English.
- Establish Sino-Libyan vocational Chinese centers within public universities.

- Implement scholarships targeting engineering, logistics, construction, and medical sectors.

(2) For China: Tailored BRI Education Cooperation

- Develop Libya-specific “Chinese + technical skills” vocational programs.
- Utilize distance teaching + localized trainers to bypass instability.
- Offer targeted teacher-training programs to cultivate Libyan instructors.

(3) Joint Initiatives

- Create localized digital platforms with open-source textbooks aligned with Libyan industry needs.
- Expand enterprise-based training in Chinese-invested projects to provide practice environments.
- Pilot micro-credentials (short-term certification) in Chinese for Oil Engineering, Construction Management, Port Logistics.

Strategic Outcome: Libya should develop institutionalized, vocationally oriented, locally trained, and digitally supported Chinese language education under a BRI-driven reconstruction framework.

Figure 1. Thematic Model of Chinese Language Development Barriers in Libya

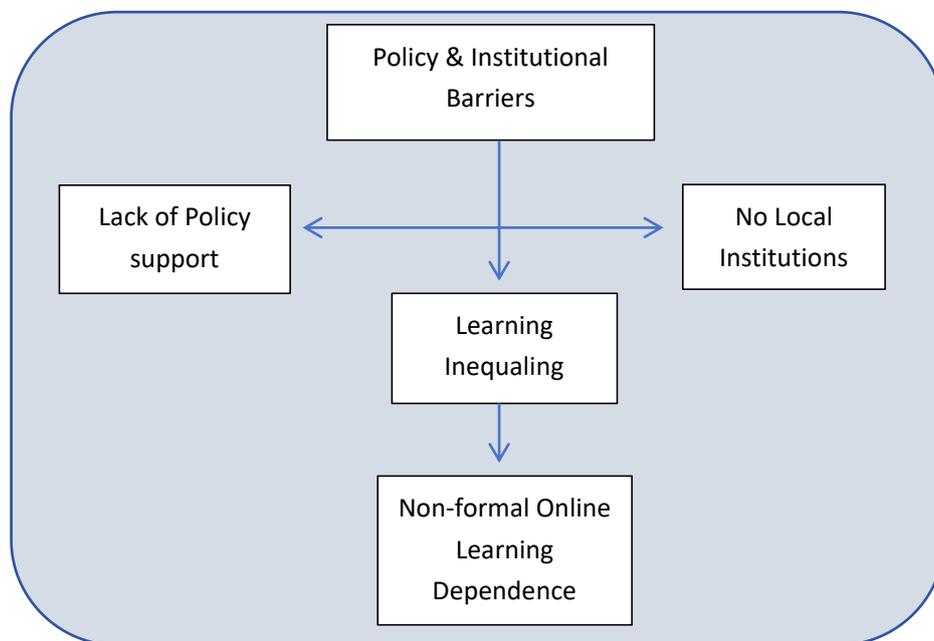


Figure 1 summarizes how the lack of institutional frameworks and language policies in Libya generates a chain effect that shapes Chinese language learning outcomes. The model illustrates three directional mechanisms:

- Policy and Institutional Barriers → No formal schools, teachers, curricula, or national recognition.
- Learning Inequality → Learners are forced into non-formal, fragmented, online-only study pathways.
- Digital Dependence with Unequal Outcomes → Students with opportunities to go abroad outperform local online self-learners.

These mechanisms reveal that Chinese language learning in Libya is constrained not by learner motivation, but by structural voids in policy, infrastructure, and teacher supply. As a result, educational inequality emerges—not due to individual effort, but due to disparities in access to institutional support.

While Figure 1 highlights the systemic barriers constraining the development of Chinese language education in Libya, the learning ecosystem is not characterized solely by obstacles. Despite the absence of formal institutions and policy-driven support, learners exhibit considerable motivation to acquire Mandarin, particularly due to economic and mobility-related opportunities associated with Sino-Libyan relations. Such motivation aligns with findings in broader African contexts, where Chinese is increasingly perceived as an economic resource linked to global mobility and employment (Xu, Stahl, & Cheng, 2022; Li, 2021). These motivations operate in parallel with structural constraints, resulting in a paradoxical environment in which high demand persists within a low-capacity system, restricting opportunities to convert motivation into learning achievement.

To illustrate this paradox, Figure 2 visualizes learners’ motivational orientations, perceived barriers, and expectations for policy support. The results demonstrate high instrumental and extrinsic motivation alongside strong demands for localized institutional development. This pattern supports observations that Mandarin expansion in Africa requires not only economic incentives but also context-sensitive policies and capacity building, particularly in politically fragile settings (Guo, 2022). Therefore, learners’ aspirations may serve as a strategic foundation for designing vocationally oriented, policy-backed Chinese language education models aligned with Libya’s post-conflict reconstruction and BRI cooperation.

Figure 2. Learner Motivation and Expectations Radar Chart

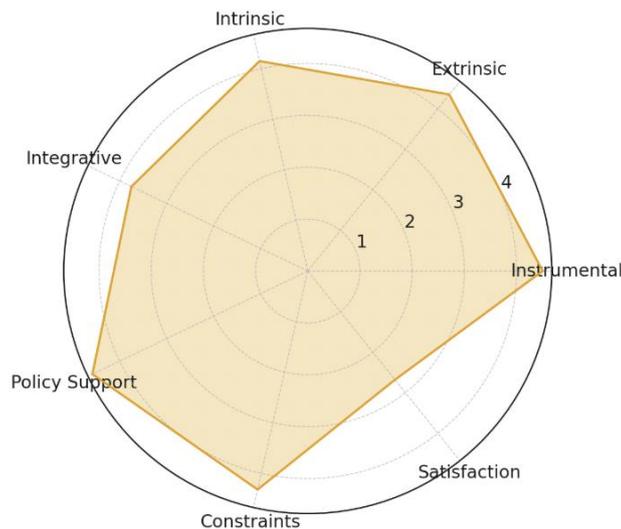


Figure 2 visualizes the relative strength of learning motivations, barriers, and expectations among Libyan Chinese learners (N = 20), based on mean values extracted from survey data.

- Policy Support Expectations (M = 4.58) and Instrumental Motivation (M = 4.50) are the strongest indicators.
- Learning Satisfaction (M = 2.68) is the weakest factor, reflecting dissatisfaction with learning experience.
- Extrinsic Motivation (M = 4.35) and Perceived Constraints (M = 4.32) show that learners recognize both the value of Mandarin and the barriers to acquiring it.

The radar chart highlights a contradiction: learners express high motivation and strong expectations, but the learning system fails to support their goals. This confirms that policy intervention, vocational integration, and institutional infrastructure are urgently required to convert motivation into practical competence.

5.3 Synthesis and Implications for Post-Conflict Language Development

The Libyan case reveals that Chinese language education can emerge even in the absence of formal state structures when propelled by market opportunities, digital access, and international mobility. However, without institutional support, such growth reproduces inequality, privileging learners with access to digital infrastructure, international networks, or economic resources. This suggests that language development in fragile states should not rely exclusively on natural market momentum; instead, it must be guided by state reconstruction, vocational alignment, and bilateral governance mechanisms.

Theoretically, the findings extend research on international Chinese language education by positioning fragile states as distinct learning ecologies, where language policy is not merely an educational decision but an instrument of reconstruction, employability, and geopolitical collaboration. Thus, Libya demonstrates that Mandarin learning is no longer solely

instructional or cultural—it becomes a post-conflict development tool, functioning at the intersection of human capital formation, national rebuilding, and BRI-oriented cooperation.

Practically, the study highlights an opportunity for China and Libya to co-develop a new paradigm of language planning: one that connects vocational pathways, teacher localization, enterprise training, and digital public goods. The sustainability of Chinese education in Libya, therefore, depends not on replicating existing African models, but on designing a BRI-embedded vocational reconstruction model tailored to fragile political contexts.

These insights provide a foundational rationale for the following conclusion and policy framework.

6. Conclusion

This study offers one of the first empirical examinations of Chinese language education in Libya, a country where political instability, fragmented governance, and a lack of language policy have produced an institutional vacuum. Unlike other African states that benefit from established Confucius Institutes, bilateral academic programs, or workforce-oriented BRI platforms, Libyan Chinese learning is characterized by an ecosystem of market - driven demand, digital self - learning, and employment - oriented motivation. The findings reveal a paradoxical condition: while strong instrumental and extrinsic motivations stimulate interest in Mandarin, the absence of state - supported infrastructure, teacher training, and curriculum localization prevents such motivation from translating into equitable learning outcomes.

The results extend current scholarship on international Chinese education by demonstrating that fragile states require distinct language development models. In Libya, Mandarin is not merely a cultural or linguistic resource; it functions as a post - conflict tool for employability, mobility, and reconstruction, closely tied to economic aspirations and human capital formation. This suggests that language planning in fragile states must consider not only pedagogy and ideology but also national recovery, vocational alignment, and industry participation. Consequently, conventional approaches that prioritize academic exchange or cultural diffusion are insufficient. Instead, a reconstruction - driven, vocationally embedded model of “Chinese + Technical Skills” is necessary to match Libya’s post-conflict socioeconomic demands.

The policy implications are clear. Sustainable Chinese language development in Libya must include: (1) localized policy frameworks incorporating Mandarin into national development agendas; (2) vocationally oriented Chinese training centers tied to reconstruction sectors such as oil engineering, logistics, construction, and healthcare; (3) teacher localization strategies supported by joint training programs and online - offline hybrid delivery; and (4) digital public goods, including open-source textbooks and industry-aligned micro-credentials.

Finally, this study highlights significant avenues for future research. Longitudinal studies can examine how evolving political stability influences language policy formation, while larger mixed-method investigations may deepen understanding of socioeconomic outcomes associated with Mandarin training. Comparative studies within fragile states (e.g., Syria, Yemen, South Sudan) could also broaden theoretical perspectives on how Chinese language education intersects with post-conflict rebuilding and BRI cooperation. In summary, Libya provides a pioneering case for understanding how Mandarin education can serve not only as a linguistic endeavor but also as a strategic instrument of reconstruction, international partnership, and workforce development in fragile contexts.

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