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Implementing Micro-Credential Programs in Chinese Universities: A Practice-Based Study under Digital Transformation

Jielin Liu*
School of Foreign Studies, Xi'an University, Xi'an 710000, Shaanxi, China

**Corresponding author: JielinLiu, liujielin@outlook.com*

Abstract: Micro-credentials have gained global momentum as flexible, skill-focused qualifications suited to digital transformation. In China, regional applied universities have adopted micro-credentials to modernize curricula and cultivate interdisciplinary talent. Despite growing policy attention, empirical evidence on the implementation of Chinese micro-credentials remains scarce. This practice-based study examines the design and initial implementation of an "Intelligent Translation and International Communication" micro-credential at a university in Northwest China. Using mixed methods including document analysis, classroom observations, student surveys, and instructor interviews, the study evaluates curriculum structure, teaching practices, and learning outcomes. Findings show high student satisfaction and notable gains in translation competence, cross-cultural skills, and AI-assisted technology use. The dual-mentor model and project-based learning enhanced industry relevance, although challenges emerged in workload, assessment, and sustainability. The program served as a flexible supplement to degree study, demonstrating the potential of micro-credentials to advance talent development under digital transformation.

Keywords: Micro-credentials; Program implementation; Chinese higher education; Digital transformation

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1. Introduction

The global rise of micro-credentials in higher education is closely tied to the pressures of digital transformation and changing workforce needs. In recent years, interest in microcredentials – short, focused qualifications attesting to specific skills – has surged. Universities facing declining enrollments and rapid industry changes have turned to micro-credential programs to attract non-traditional learners and upskill students through flexible, online and blended offerings. Governments and employers also increasingly view micro-credentials as tools to quickly certify in-demand competencies, thereby improving graduates' employability in the digital economy [1].

China's higher education system, particularly its regional applied universities, is under similar pressure to reform in the face of new technologies and industrial transformation. The emergence of artificial intelligence, big data, and other "smart" technologies has exposed weaknesses in traditional degree programs, which often struggle to adapt curricula to fast-evolving skill requirements [2]. Applied universities, which focus on practical training for local industries, are seeking

innovative models to cultivate interdisciplinary, industry-ready talent. In this context, Chinese educators have introduced "micro-majors" – Chinese term for micro-credential programs – as a new approach to break rigid disciplinary boundaries and integrate new technology and industry needs into undergraduate education [3]. Micro-credential education in China is framed as both an experiment in undergraduate teaching reform and a strategy to promote more personalized, flexible training of "compound" (interdisciplinary) professionals for the digital era.

However, there is a notable research gap regarding the implementation of micro-credentials in the Chinese context. While Chinese scholars have begun to explore micro-credentials, much of the domestic literature remains theoretical or descriptive, emphasizing conceptual definitions, curriculum design, and potential value [4]. Empirical studies examining how micro-credential programs are carried out in practice, especially at local universities are limited. This study aims to address that gap by examining the design and initial outcomes of an "Intelligent Translation and International Communication" micro-credential program at a regional applied university in Northwest China. Through a practice-based case study, the paper analyzes the program's curriculum and implementation process, evaluates student and teacher experiences, and compares these findings with those reported at other Chinese institutions. The objective is to derive insights into effective micro-credential practices in China's higher education system under digital transformation, and to understand how this local example aligns with or diverges from broader trends.

2. Literature review

2.1. Defining micro-credentials

There is no single agreed definition of micro-credentials, but they are broadly seen as short, focused learning experiences that yield a certification of specific skills or competencies. The OECD, for instance, refers to micro-credentials as "alternative credentials", qualifications like certificates or digital badges that fall outside formal degree programs [5]. In the UK, the Quality Assurance Agency (QAA) defines micro-credentials as smaller than traditional "macro" qualifications (degrees), typically credit-bearing and meant for upskilling or continuing professional development [6]. Many micro-credentials are offered online and issued as digital badges or short-course certificates, which can sometimes be "stacked" into larger qualifications.

2.2. International research

Studies worldwide suggest micro-credentials have both potential benefits and challenges. They are praised for their flexibility, affordability, and rapid response to labor market needs, providing targeted upskilling and lifelong learning opportunities for learners who may not pursue full degrees [1]. Micro-credentials can improve access to education and help universities be more responsive to industry changes. On the other hand, critics caution that micro-credentials may foster a "gig economy" approach to qualifications, shifting the burden of skill development to individuals and potentially undermining the public role of higher education [7]. Moreover, empirical research on micro-credentials is still limited. Recent reviews note a dearth of evidence for micro-credential effectiveness in practice; stakeholders such as students and employers remain uncertain about the value of these new credentials [8]. This gap underlines the need for practice-based research, particularly as institutions worldwide experiment with micro-credentials in various forms.

2.3. Micro-credentials in China

Within China, micro-credentials (often called "micro-majors") have emerged as part of higher education reforms to meet new industry and technology demands. A typical Chinese micro-credential consists of around 5–10 courses designed to impart a set of job-specific skills, enabling students to quickly meet the requirements of a particular role or field [4]. These programs are usually embedded within undergraduate education: students from various majors can enroll and, upon completion, earn a university-issued certificate (often with credit that can count toward their degree). Chinese research emphasizes that micro-credentials are interdisciplinary and practice-oriented, aiming to cultivate "compound" talents with integrated skills (e.g., combining foreign language, technology, and industry knowledge) [3]. Micro-credential initiatives in

China are closely tied to national strategies like the "New Liberal Arts", focusing on integrating emerging disciplines and digital skills into traditional curricula [9].

2.4. Differences from international frameworks

Unlike in the West, where micro-credentials are often designed to be portable across institutions and highly visible to employers (e.g. through widely recognized digital badges), Chinese micro-credentials currently function more as internal credentials [5]. Their recognition in the job market is not yet well-established, and standards for quality and credit transfer are still developing [10]. Chinese educators caution against adopting micro-credentials as mere education fads; they call for clear objectives and quality assurance to ensure these programs truly address skill gaps [11].

3. Program design and institutional context

This study was conducted at a public applied university in Northwest China, which has a mandate to serve regional development through practical education. In recent years, the university has embraced China's "New Liberal Arts" initiative to modernize liberal arts programs by integrating technology and interdisciplinary content. The Intelligent Translation and International Communication micro-credential was conceived in this context as a pilot program to blend foreign language training with digital technology. The program's stated mission was to "break disciplinary boundaries" and deeply fuse translation theory, AI technology, and industry practice, creating a training ground for "foreign language +" multidisciplinary talent.

3.1. Program structure

The Intelligent Translation and International Communication micro-credential is organized as a one-year certificate program, taken concurrently with a student's degree studies. The curriculum spans two semesters and comprises five courses (totaling 10 credits). It is open to undergraduates from any major. To accommodate participants' regular coursework, classes for the micro-credential are scheduled during evenings and weekends, using a blend of online and offline sessions that do not conflict with students' primary major classes. Upon completing all requirements (and earning the 10 credits), students receive a certificate conferred by the university and "may substitute the micro-credential credits for elective credits" in their degree program. This policy incentivized students to participate by ensuring the micro-credential contributes to their progress toward graduation.

3.2. Curriculum and courses

The program's curriculum was co-designed by university faculty and industry experts to balance foundational knowledge, practical skills, and technology integration. It consists of five 2-credit courses as shown in **Table 1**.

Table 1. Curriculum structure with integrated course progression

Course	Credits	Stage	Brief description
Comprehensive English	2	Language Foundation	Strengthens advanced English skills through intensive reading, writing, and speaking practice; provides linguistic grounding for higher-level translation tasks.
Translation Theory and Practice	2	Conceptual Core	Introduces major Chinese and Western translation theories and applies them through bilingual exercises; builds theoretical and methodological foundations.
Cross-Cultural Translation Practice	2	Intercultural Competence	Develops students' ability to handle culturally specific expressions and avoid misinterpretation; emphasizes analysis of cultural differences in translation.
Shaanxi Culture Translation Workshop	2	Regional Application	A project-based course translating local cultural materials such as tourist texts and intangible heritage; includes field visits and iterative revision.
AI Translation Technology	2	Technical Enhancement	Hands-on training with machine translation, localization tools, and AI-assisted workflows using ChatGPT, Trados, and Python scripts; cultivates a "translator + tech" skill set.

It is worth noting that the program was originally designed to include three specialized translation workshops, including Business Translation, Science and Technology Translation, and Cultural Translation which intended to match the diverse disciplinary backgrounds of participating students. However, due to the composition of the first cohort (33 students, 87.8% of whom majored in humanities fields such as English, Chinese, and History), only the Cultural Translation Workshop was implemented during the initial offering. This adjustment ensured better alignment with students' prior knowledge and learning needs, while also allowing the instructional team to pilot the workshop model in a manageable scope. The experience provided important insights into how cohort characteristics influence the practical delivery of micro-credential curricula and will inform future expansion of the workshop structure as student enrollment diversifies.

3.3. Teaching and learning approach

Courses are co-taught by veteran faculty and industry experts in a dual-mentor model. Senior professors cover academic theory while enterprise mentors from leading companies (e.g., iFlytek) contribute practical projects and technical insights. This collaboration ensures the curriculum remains relevant to industry practices. Learning activities emphasize practical application: students participate in simulated translation projects, technology labs, and field exercises, receiving continual feedback on their work. This approach embodies the program's ethos that what industry needs should be learned in the classroom.

3.4. Learning outcomes

By completion, students are expected to have mastered core translation theories and cross-cultural communication strategies, become adept with AI and computer-assisted translation tools, and be capable of producing accurate, effective translations in specialized domains (business, technology, culture). These interdisciplinary competencies align with local industry needs in the AI era, preparing graduates to be adaptable translators in a technology-driven global market.

4. Methods

A mixed-methods, practice-based approach was employed to examine the implementation of the micro-credential program. Multiple sources of data were collected.

4.1. Document analysis

We reviewed official program documents, including the micro-credential admission brochure, course syllabi, and internal reports. These documents provided background on the program's design, stated learning outcomes, and operational guidelines.

4.2. Classroom observations

The researchers conducted non-participant observations in selected class sessions (approximately 8 hours total). Detailed field notes were taken on teaching activities, use of technology, student engagement, and any challenges observed in real time. These observations offered first-hand insights into how the curriculum was delivered and how students interacted in practice.

4.3. Student survey

At the end of the program, a survey was administered to all 33 student participants to gather feedback on their experiences. The survey included Likert-scale items on satisfaction with various aspects (curriculum, teaching, usefulness of skills learned) and self-assessment of skills gained (e.g., confidence in using translation software, intercultural communication ability), as well as open-ended questions. 28 students submitted valid responses (84.8% response rate). Quantitative survey data were analyzed for descriptive statistics (e.g., mean satisfaction ratings), while open-ended responses were coded for

common themes.

4.4. Interviews

This study has conducted semi-structured interviews with 4 instructors involved in the micro-credential (three university professors and one industry mentor instructors). Each interview lasted about 45–60 minutes and explored the teachers' perspectives on program implementation, such as perceived successes, difficulties encountered, and suggestions for improvement. Interviews were audio-recorded with consent and transcribed verbatim for analysis.

All qualitative data (observation notes, interview transcripts, and open-ended survey comments) were analyzed using thematic analysis. The researchers inductively coded the data to identify recurring themes and patterns related to teaching strategies, student engagement, skill development, and program challenges. Then, theme was compared across different data sources for triangulation. Basic descriptive analysis was performed on survey quantitative items (calculating frequencies, percentages, and average ratings).

Ethical protocols were observed throughout the study. Participation in the survey and interviews was voluntary and based on informed consent. Students and teachers were assured of anonymity; pseudonyms were used in reporting quotes to protect individuals' identities. The study was approved by the university's academic ethics committee, and feedback was provided to the host institution to support ongoing program improvement.

5. Findings and discussion

5.1. Student satisfaction and skills development

Overall, student feedback on the micro-credential was very positive. In the post-program survey, 26 of 28 respondents (92.9%) indicated they were "satisfied" or "very satisfied" with the micro-credential experience, and a majority found the content highly relevant to their future career plans. Students particularly appreciated the practical orientation and technological skills acquired. For instance, 85.7% of students agreed that their ability to use translation technology (such as CAT tools and AI translators) had improved, and 82.1% felt their overall translation skills were stronger after completing the program. Open-ended comments echoed these quantitative results: many students noted that working on real-life translation projects made learning more engaging. As one student noted, the museum translation workshop was "challenging but really rewarding", giving them a first taste of applying translation skills outside the textbook. Another student mentioned gaining confidence in using tools like ChatGPT and Trados, which she had not been exposed to before. Students also valued the interdisciplinary breadth of the curriculum. These humanities-major students appreciated learning some coding and AI concepts. This corroborates the program's goal of producing well-rounded "translation +" talent.

However, some students did feel the workload was demanding and had difficulty balancing the micro-credential with their other studies. In particular, a few non-language majors struggled initially with advanced English content, and conversely some language majors found the coding exercises challenging. Nonetheless, many noted that working in mixed-major teams allowed them to support each other and overcome these difficulties.

5.2. Teaching innovations and instructor perspectives

Interviews with the instructors revealed a sense of accomplishment as well as areas for improvement. The teachers unanimously praised the micro-credential format for enabling pedagogical innovations that would be difficult in a traditional course. They highlighted the benefits of the co-teaching model: university professors and industry experts collaborated closely, and this blend of perspectives was very enriching for students and faculty alike. One professor noted she had "never seen students so motivated" before, attributing it to the real-world nature of the projects and the presence of industry mentors. Industry mentors praised the students' ability to quickly pick up practical skills. The instructors did report some challenges and learning curves in implementation. Both professors noted that they had to update their own technical knowledge in order to teach the new technology content. Aligning the content between academic and industry-led sessions

required careful coordination. For example, the professor and the enterprise mentor teaching the AI technology course had to synchronize their lesson plans to ensure theory and hands-on practice reinforced each other. This teamwork was largely successful, but it demanded more planning than a typical course. Another challenge was assessment, as the team had to devise new rubrics for project-based evaluation instead of traditional exams. Despite these hurdles, instructors felt the outcomes justified the effort. They also felt supported by the university administration, which recognized their work on the micro-credential as a valuable innovation [9].

5.3. Program effectiveness and areas for improvement

Overall, the micro-credential achieved its intended outcomes. Students gained tangible skills (from using translation software to conducting cross-cultural analysis) and increased their employability. Notably, two students secured internships at a local translation agency immediately after the program, and they credited the micro-credential (especially the industry mentor connections) with giving them an edge. This outcome underscores the micro-credential's role in providing demand-driven, career-oriented education [12]. The program also filled gaps in the standard curriculum; several students remarked that they would not have encountered such practical experiences or tools in their normal degree courses. On the other hand, the pilot revealed areas for improvement. One issue is the sustainability of the heavy practical focus: instructors worried about maintaining the same level of industry involvement in the long term. The current cohort benefited from enthusiastic company partners, but continuing that partnership will require formal agreements and possibly incentives. Another concern was external recognition of the micro-credential. Because the certificate was a university-specific qualification, its acceptance in the broader job market remains uncertain [11]. This issue – noted by both our participants and in micro-credential discourse nationally – suggests a need for clearer frameworks (such as national credit recognition or digital badging) to improve the portability and employer recognition of such credentials in the future. Students also suggested minor scheduling adjustments (e.g., spacing out some of the intensive projects) to alleviate pressure, which the program administrators are considering for the next cohort.

5.4. Comparison with other micro-credential initiatives

Our case aligns with reports from other Chinese universities. Many micro-credentials in China target emerging fields (big data, fintech, new media, etc.) and emphasize practical, industry-aligned training. Strong industry integration and hands-on projects are widely cited as success factors, for example, a digital culture micro-credential in Beijing achieved notable improvement in students' practical skills and job prospects through joint teaching with companies. Similarly, our instructors' view that administrative backing was crucial echoes recommendations to incentivize faculty participation in micro-credential initiatives [9].

Nevertheless, differences in implementation exist across contexts. Unlike some Chinese micro-credentials that are purely online MOOCs, our program was campus-based and blended into degree study, which might have contributed to its high completion rate (all 33 enrolled students finished, whereas drop-out can be an issue in fully online courses). Also, whereas certain micro-credentials in China have been criticized for unclear positioning or "jumping on the bandwagon" without proper needs analysis, the development of our program was driven by a clear skills gap in the local market (AI-assisted translation) identified through consultation with industry [4]. This purposeful alignment with regional needs likely underpins its effectiveness. Notably, our case is in a humanities domain (translation), demonstrating that micro-credentials are not limited to STEM or technical fields. In fact, the integration of technology and practice in a language program exemplifies the spirit of the New Liberal Arts initiative, showing how even traditional disciplines can innovate via micro-credentials.

5.5. Alignment with international trends

Many of the patterns observed in our study parallel international findings on micro-credentials. The high student satisfaction and improved employment readiness correspond with global claims that micro-credentials can make education

more flexible, applied, and responsive to labor market demands [7]. Our program's blend of online/offline delivery and short, skill-focused courses is essentially a localized example of the worldwide micro-credential movement prompted by digital transformation and the need for continuous upskilling [1]. At the same time, some differences are evident when comparing to Western models. Internationally, many micro-credentials are offered as standalone online courses for adult learners, whereas our micro-credential was embedded within an undergraduate program. This integration likely contributed to its success through academic credit and institutional backing, but it also means the credential's portability outside the university is limited compared to, say, a Coursera certificate with broader recognition.

Finally, our findings address a common concern that micro-credentials could dilute educational quality [7]. In this case, the micro-credential functioned as a rigorous enhancement to the curriculum (not a lower-quality substitute), and students perceived it as an enrichment rather than a shortcut. This suggests that micro-credentials, when embedded thoughtfully in an institutional setting, can uphold academic standards and avoid the pitfalls that critics have feared.

6. Conclusion and implications

This practice-based study examined the design and initial implementation of a translation micro-credential at a Chinese applied university, yielding insights both for local reform and the broader micro-credential movement. The program's success in enhancing students' practical skills, interdisciplinary learning, and industry readiness demonstrates the significant potential of micro-credentials in China's applied higher education. It served as a nimble vehicle to update curriculum content (integrating AI technology and real projects) and to cultivate the "compound" talents that regional universities seek to produce. Importantly, this was achieved without displacing the traditional degree structure, instead, the micro-credential complemented and enriched students' undergraduate education, suggesting that micro-credentials can be leveraged as a flexible add-on within degree programs.

The findings imply several recommendations for policy and practice. First, universities and education authorities should consider developing clearer frameworks for micro-credentials (e.g. guidelines for credit transfer and external credential recognition). Establishing standards or a national qualifications registry for micro-credentials would increase their credibility and portability, addressing stakeholder concerns about how these credentials translate beyond the issuing institution. Second, strong partnerships with industry should be encouraged and facilitated (through incentives or formal agreements), as they are key to ensuring micro-credential curricula remain relevant to workforce needs. Third, institutions may need to provide support for faculty who design and teach micro-credentials, for example, recognizing this work in faculty evaluation and offering training in new pedagogical or technological skills. Our case indicated that when instructors feel supported and can innovate, the quality of teaching and student engagement in micro-credentials is high.

This study was limited in scope to a single program and its first cohort; the outcomes observed are preliminary. Future research could track graduates' longer-term career trajectories to evaluate the micro-credential's true impact on employability. Comparative studies of micro-credential implementation across different universities and fields would also be valuable to generalize best practices. Nevertheless, our study provides concrete evidence that micro-credentials, under the right conditions, can drive curricular innovation and talent development in China's digital transformation era, a finding that resonates with global trends while highlighting the importance of local context.

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