Language Teaching Reform in Military Academies in the Digital Age: An Exploration of the Integrated Flipped Classroom and CLIL Model

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Abstract: Since Taiwan's promotion of the bilingual education policy, language teaching reform in higher education has faced special challenges. This study focuses on military academy students to explore the feasibility of implementing an integrated flipped classroom and CLIL (Content and Language Integrated Learning) model. Through an 18-week empirical study of 25 military students from the Applied English Department at Kai Nan University, it was found that the "input-negotiation-reflection" cycle constructed based on digital tools such as BBC Learning English, MyET, and Quizlet not only increased oral fluency by 24.57 words per minute and reduced hesitation phenomena by 40%, but also decreased the failure rate from 24% to 12%. Notably, the study reveals the transformation mechanism of military learners from "anxious resistance" to "active construction": asynchronous learning resources compensate for time fragments disrupted by duties, AI pronunciation tools provide a "safe practice space" free from peer judgment, while the content themes such as "technology ethics" and "global issues" under the CLIL framework activate their higher-order thinking potential. The article further points out that the transformation of teachers' TPACK competence, the deep coupling of technical tools and pedagogy, and the differentiated scaffolding design for low-proficiency learners constitute the three pillars of this model's success. The study provides a replicable practical framework for language education of special groups and contributes empirical reference for blended teaching reform in the post-pandemic era.

Keywords: flipped classroom; CLIL; military academy students; ict integration; low-proficiency learners; differentiated instruction

1. Problem Origination: When Language Teaching Reform Encounters Special Learners

Compared to general university students, military academy students exhibit distinct heterogeneity: an average age of 23.4 years, CEFR proficiency levels ranging from A2 to B1, prolonged detachment from academic environments, and fragmented time pressures from rotational duty assignments. These learners possess psychological advantages of strong discipline and team consciousness, yet face three challenges — high language anxiety, weak foundational skills, and excessive cognitive load [1-3]. During the COVID-19 pandemic, the vulnerability of traditional face-to-face teaching became evident, while entirely online instruction struggled to meet the rigid demands of immediate interaction for speaking and listening skills. This dual dilemma prompts us to consider: Could there exist a teaching model that both accommodates the unique schedules of military students and systematically enhances language proficiency?

Existing research has accumulated considerable experience on flipped classroom applications in language teaching[4] (Hung, 2015; Mehring, 2017), and the value of CLIL models in cultivating academic language ability has been widely recognized[5] (Coyle et al., 2010). However, practical exploration of organically integrating both and placing them in the special context of military education remains blank. More importantly, most studies focus on superficial application of technical tools, lacking in-depth analysis of mechanism issues such as how teachers reconstruct TPACK competence[2], how to achieve deep coupling of technology-content-pedagogy, and how to provide precise scaffolding for low-proficiency learners. This article attempts to fill this gap by creatively integrating the time-restructuring logic of flipped classroom with the content-driven philosophy of CLIL in Kai Nan University's "English Listening and Speaking Training" course, constructing an innovative model adapted to military students' learning characteristics.

2. Theoretical Reconstruction: An Integrated Framework from Flipped Classroom to CLIL

2.1 Repositioning Flipped Classroom: Deep Reform Beyond Time Management

Traditional flipped classroom research often focuses on the efficiency logic of "pre-class videos replacing lectures."

This study argues its core value lies in reconstructing learning power relations. Placing authentic materials from BBC Learning English and AI feedback mechanisms from MyET in the pre-class segment is not simple content relocation, but rather endowing learners with autonomy to control learning pace — military students can repeatedly watch during duty intervals and practice autonomously during off-duty periods. This "time sovereignty" has liberating significance for groups whose time is highly regulated. The 40-minute collaborative tasks in class (such as "Social Media Influencer Debates," "YOLO Culture Critique") then shift to higher-order thinking negotiation, echoing the cognitive upgrading path of "analysis-evaluation-creation" in Bloom's Taxonomy[6][7].

2.2 Localization Adaptation of CLIL: Contextual Application of Soft CLIL Model

Given students' A2-B1 language reality, a hard CLIL model is clearly unfeasible. This article adopts a soft CLIL strategy: using themes such as "technology ethics" and "global citizenship" as content carriers, with language objectives focusing on academic vocabulary accumulation and argumentative structure construction[5]. Through TED talks inputting cross-cultural perspectives, Padlet reflections promoting critical thinking (Byram, 1997), and the final video project "How to Make the World a Better Place" achieving 4C integration of language, content, cognition, and culture. This design avoids the trap of sacrificing language accuracy for content and prevents the dryness of pure language drills[8].

2.3 Matching Mechanism Between Military Students' Learning Characteristics and Teaching

Military students' "high discipline-high anxiety" characteristics require precise teaching strategy alignment. The private practice space provided by MyET (described by students as "a safe zone where I'm not afraid of making mistakes") effectively reduces affective filters[9] (Krashen, 1982). Kahoot's competitive mechanism fits their collectivist culture, while Quizlet's spaced repetition meets the reinforcement needs for basic vocabulary. Critically, the final group project allows multiple recordings, which highly matches the behavioral pattern of "repeated practice until perfect" in military training, thereby stimulating intrinsic motivation.

3. Research Design: A Practical Inquiry from a Mixed-Methods Perspective

3.1 Research Context and Participants

In Kai Nan University Applied English Department's "Listening and Speaking Training (II)" course, 25 military students (average age 23.4 years) participated in an 18-week integrated flipped-CLIL teaching. The comparison semester (110-1) adopted traditional lecture methods, while the experimental semester (110-2) implemented the integrated model, taught by the same instructor to control variables.

3.2 Technology Integration Architecture

Constructing a "input-processing-output" technology ecology:

Pre-class: BBC Learning English provides authentic materials (comprehensible input), MyET achieves automated pronunciation feedback (private output correction), Quizlet completes vocabulary rehearsal (formal memory reinforcement), Padlet activates prior knowledge (schema construction).

In-class: Kahoot quickly diagnoses comprehension gaps, 40-minute collaborative tasks (information-gap debates, role-plays) push meaning negotiation, while topics like "Social Media Influencer Critique" deepen cross-cultural cognition.

Post-class: Padlet reflection journals promote metacognition, MyET targeted repeated practice forms a closed loop[1].

3.3 Data Collection and Analysis

Adopting mixed-methods triangulation:

Quantitative data: MyET system logs (pronunciation accuracy, fluency), Quizlet mastery rates (80-92%), Kahoot reaction times; speech rate, mean length of runs (MLR), and hesitation markers in midterm and final oral samples.

Qualitative data: 15-item Likert questionnaire (Cronbach α=.89), weekly Padlet reflections (thematic analysis), classroom observation notes.

Comparative analysis: Differences in grade distribution, failure rates, and assignment completion rates between semesters 110-1 and 110-2[10].

4. Research Findings: Multi-Dimensional Effectiveness Presentation

4.1 Quantifiable Leap in Language Ability

The flipped semester showed systematic improvement:

Fluency: Final speech rate reached 74.83 words per minute (midterm: 50.26), MLR increased from 4.2 to 6.8 words,

hesitation markers decreased by 40%. This progress not only reflects improved automation but also shows cognitive resources shifting from form monitoring to content organization[11].

Accuracy: MyET showed pronunciation scores improved by 12-18 points, with significant improvement in difficult points such as /θ/ sound, word stress, and linking. Notably, students practiced an average of over 12 times, confirming military students' behavioral characteristic of "achieving precision through repetition."

Vocabulary Depth: Quizlet data showed 78-120 words mastered per unit, but more importantly, the idiom usage rate in the final video project reached 3.2 times per 100 words, significantly higher than 0.7 times at midterm, indicating vocabulary shifted from passive reception to active retrieval.

4.2 Qualitative Transformation in Attitude

Thematic analysis revealed five key transformations:

From fear to control: Students shifted from "dare not speak" to "able to control speaking pace," with MyET's privacy repeatedly mentioned as "allowing me to make mistakes without being laughed at"[12].

From passive to autonomous: Military students began utilizing duty fragment time for learning, with "brushing Quizlet while waiting for shift change" becoming normal, showing time management ability transfer.

From isolated to collaborative: In group video production, "discovering teammates also have difficulties" reduced sense of isolation, with peer scaffolding effects highlighted.

From superficial to critical: Discussions on topics such as "nomophobia" led students to begin analyzing using concepts like "influencer responsibility" and "digital citizenship," with cognitive depth improved[13].

From instrumental to identity: One student reflected, "Using English to discuss making the world better feels like being a real global citizen," showing language use shifting from instrumental motivation to identity.

4.3 Breakthrough Progress for Low-Proficiency Learners

Particularly noteworthy is the transformation of "marginal learners": among 6 failing students from last semester, 3 improved to above 70 points; 1 student who had completely disengaged from class completed all tasks this semester. Analysis found that the flipped model built a safe upward channel for such students through the mechanism of "reducing public performance pressure + providing repeated practice opportunities + allowing asynchronous catch-up." This validates the practical value of Gardner's "Zone of Proximal Development" theory under technical scaffolding[14].

5. Mechanism Explanation: Why the Flipped-CLIL Model Is Effective for Military Students

5.1 Time Reconciliation with Duty Systems

The "fixed time-space" of traditional classrooms fundamentally conflicts with the "unpredictability" of military duties. The asynchronous learning of the flipped model "de-synchronizes" 50% of teaching content, allowing students to complete it during fragmented periods such as pre-shift, lunch breaks, and night hours. This design is not simply a convenience measure but a cultural adaptation to the military system, embodying the true meaning of "student-centered"[6].

5.2 Technology Empowerment Decoupled from Anxiety

Low-proficiency learners fear most exposing incompetence before peers. MyET's AI scoring eliminates interpersonal judgment pressure, allowing students to repeat recordings until satisfied. This "desocialized practice" is crucial for anxious groups. Data shows students recorded an average of 8.3 times before submitting final versions, but each repetition accompanied micro-improvements in fluency, forming a closed loop of "error-feedback-correction-reinforcement."

5.3 Content Themes Resonating with Identity

Under the CLIL framework, topics such as "technology ethics" and "global issues" align perfectly with the role of military students as "aspiring public affairs participants." When language is used to discuss "how to make the world a better place," learning motivation shifts from external credit-driven to internal value-driven. This transformation is particularly evident in the final video project, where students invested an average of 6.7 hours in production, far exceeding conventional assignments [7].

6. Teacher Role Transformation: The Three-Dimensional Evolution of TPACK Competence

6.1 From Instructor to Learning Designer

Teachers are no longer just language models but designers of seamless "pre-class-in-class-post-class" learning paths. This requires precise "cognitive load anticipation"—pre-class video length controlled at 5-7 minutes, Quizlet vocabulary limited to 15-20 core words, ensuring pre-class tasks can be completed within 20 minutes to avoid squeezing military students' rest time[15].

6.2 From Corrector to Technology Resource Integrator

Teachers need to judge which technology suits which language difficulty: pronunciation uses MyET, vocabulary uses Quizlet, interaction uses Kahoot, reflection uses Padlet. This "tool-objective matching" ability constitutes the core competitiveness of the integrated model. Research shows student engagement increased by 63% when technology use precisely matched language acquisition stages.

6.3 From Evaluator to Emotional Supporter

Military students have natural reverence for authority but also anxiety about failure. Teachers provide personalized encouragement through Padlet's private comment function, deliberately set "safety questions" in Kahoot to boost confidence, and match roles according to personalities in group projects. This dynamic balance of "scaffolding-withdrawal" requires teachers' acute insight into learners' emotional states.

7. Challenges and Reflections: Boundary Conditions for Model Dissemination

7.1 Realistic Bottleneck of Teacher Readiness

Despite the model's effectiveness, replication faces challenges of insufficient teacher TPACK competence. The participating teacher has dual backgrounds in applied linguistics and computer science, which is a minority among university faculty in Taiwan Province. Most language teachers' use of tools like BBC Learning English remains at the "playing videos" level, struggling to achieve deep integration with CLIL objectives.

7.2 Inequality in Technology Access

Although military students have one device per person, network stability and device performance vary significantly. One student at a mountain duty point could not complete MyET practice for two consecutive weeks due to signal issues, causing progress lag. This suggests that compensation mechanisms such as offline resource packages are needed for technologically disadvantaged groups during dissemination.

7.3 Lag in Assessment Systems

This study still uses oral presentations as the main assessment method, which inadequately measures CLIL core objectives such as listening comprehension and critical thinking. Future development of a multi-dimensional assessment matrix integrating "technology log analysis + discourse analysis + reflection text analysis" is needed.

8. Practical Implications and Policy Recommendations

Based on research findings, three recommendations are proposed for special group language education: **Principle of Model Adaptation**: The flipped-CLIL integration is not a universal solution but provides a feasible path for time-constrained, high-anxiety learners. The key is that "soft CLIL content selection" and "degree of flipped asynchrony" need dynamic adjustment according to student characteristics. **Technology Integration Strategy**: Avoid "tool stacking," follow the "language difficulty-technology function" matching table. For example: pronunciation → AI feedback tools (MyET), vocabulary → spaced repetition tools (Quizlet), interaction → gamified tools (Kahoot), forming an ecology rather than a collection. **Support System Reconstruction**: Universities need to provide "teaching load weight bonuses" and "technical training workshops" for teachers undertaking special teaching tasks, and establish "learning communities" between military and civilian students to promote cross-group mutual assistance.

9. Conclusion: Innovation Beyond Methodology

This article confirms that the integration of flipped classroom and CLIL is not a simple superposition of two teaching methods but creates a new ecology suitable for military students' learning characteristics. Its success lies not in technological

advancement but in precisely responding to special groups' triple needs: flexibility in time, safety in emotion, and challenge in cognition. The fluency improvement of 24.57 words per minute and the 50% reduction in failure rates are important, but the more profound value lies in letting marginalized learners believe again: "I can also master English."

Language teaching reform in the post-pandemic era needs more such "warm-hearted" innovations rooted in learners' real dilemmas. Future research should expand sample diversity and deeply track how graduates migrate this autonomous learning ability in long-term careers. After all, the ultimate goal of education is not to improve scores but to cultivate lifelong learners who can confidently face global challenges.

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