
Navigating Bilingualization: Challenges and Adaptation of Vietnamese Master's Students in English-Medium Instruction under Taiwan's Bilingual 2030 Policy

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ABSTRACT

Purpose – This study investigates the challenges faced by Vietnamese master's students enrolled in bilingual and English-Medium Instruction (EMI) programs in Taiwan. It examines how institutional, linguistic, cultural, financial, and health-related factors shape their academic and social adaptation within the bilingualization framework of Taiwan's Bilingual 2030 Policy (BN2030). By doing so, it highlights implementation gaps and the sociolinguistic tensions embedded in Taiwan's push for bilingual higher education.

Design/methodology/approach – A mixed-methods design was employed. Six semi-structured interviews with Vietnamese master's students were analyzed using thematic analysis to capture lived experiences. To complement these qualitative insights, Latent Dirichlet Allocation (LDA) topic modeling was applied to the interview transcripts, enabling computational validation of emerging themes. The research adapts Cheung's (2013) Transactional Acculturation Stress and Adjustment Model (TASAM) to interpret the dynamic process of adaptation.

Findings – Four major challenges emerged: socio-cultural adjustment, academic challenges, financial constraints, and health and well-being challenges. Students reported uneven EMI delivery, linguistic hierarchies, limited institutional support, and reliance on peer networks. LDA analysis confirmed these patterns and revealed hidden subthemes of identity negotiation and coping strategies.

Originality/value – This study contributes by combining qualitative and computational approaches under a single framework (TASAM-LDA). It provides new insights into how Southeast Asian students experience Taiwan's bilingualization in practice and suggests directions for more inclusive EMI implementation.

Keywords: EMI challenges, thematic analysis, LDA topic modeling, TASAM, international student adaptation, higher education, Vietnamese students, BN2030

1. INTRODUCTION

The rise of internationalization has positioned English-Medium Instruction (hereafter EMI) at the forefront of higher education strategies across Asia, as institutions seek to enhance global competitiveness, attract talent, and improve rankings (Lai & Idris, 2025; Nguyen et al., 2019; Phyak, 2024). In Taiwan, this momentum is exemplified by the 2030 Bilingual Policy (hereafter BN2030), which aims to boost English proficiency and international visibility through expanded EMI offerings (Chang, 2025; Lin et al., 2024; Yeh, 2023). However, the rapid rollout of EMI policies has been widely associated with gaps between policy design and classroom practice (Chang, 2025; Chu et al., 2018; Huang, 2024; Nguyen, 2021).

Despite its promise, EMI implementation continues to pose persistent challenges, particularly linguistic barriers, cultural adjustment issues, and limited academic and social integration for international students (Chu et al., 2018; Newton et al., 2021; Nguyen, 2021; Sheu et al., 2022; Wang & Shen, 2024; Wong & Hyde, 2024). These issues often result in uneven learning outcomes and dissatisfaction, particularly when classroom language use fluctuates or support mechanisms are lacking (Lai & Idris, 2025; Walkinshaw et al., 2017).

The Vietnamese student population is a major component of Taiwan's international enrollment, accounting for 39,695 students during the 2024 academic year (Overseas Community Affairs Council, 2025). This research focuses on Vietnamese master's students, whose advanced-level study offers deeper insights into EMI adaptation and institutional support. Attracted by regional policies and economic opportunity, they face distinct pressures: linguistic limitations, cultural dissonance, financial strain, and their health adaptation (Chou et al., 2012; Lin & Ivinson, 2012; Newton et al., 2021). These stressors, compounded by rising tuition and limited social inclusion, negatively affect students' academic performance and lives (Gribble, 2011; Sheu et al., 2022).

To address these complexities, this study adopts the Transactional Acculturation Stress and Adjustment Model (TASAM) and employs a mixed-methods approach. Combining qualitative thematic analysis with Latent Dirichlet Allocation (LDA) is a machine learning tool used to uncover hidden patterns in text. Therefore, this study aims to explore how Vietnamese master's students adapt to Taiwan's bilingual and EMI environments, using the TASAM as an interpretive framework.

2. LITERATURE REVIEWS

2.1 Theoretical and Regional Context

Understanding international students' adaptation requires an appreciation of the interplay between individual agency and institutional environment. Building on Cheung (2013)'s study of acculturation stress among mainland Chinese students in Hong Kong, this study adapts the conceptual lens of the *Transactional Acculturation Stress and Adjustment Model (TASAM)*. Although Cheung did not formally name this model, his findings on language, academic, socio-cultural, and financial adaptation inspired an analytical synthesis in this study into five relational domains—**Trust, Attraction, Structure, Accomplishment, and Mobilization**—that describe how individuals navigate cultural and institutional transitions. The TASAM frames adaptation as

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2
3 a transactional process in which stress and coping evolve through ongoing exchanges between the
4 self and the system, consistent with interactional and ecological perspectives on international
5 student adjustment (Cheung, 2013; Gill, 2007; Singh & Jack, 2022). This study applies this lens
6 to examine Vietnamese students' negotiations of bilingual academic settings shaped by Taiwan's
7 national language policy.
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10 Across East Asia, EMI has become a flagship of educational internationalization. Japan's Global
11 30 and Top Global University projects, Study Korea 300K Project, and Taiwan's Bilingual 2030
12 Policy reflect shared ambitions to enhance global competitiveness (Bolton et al., 2023; Kwon,
13 2024; Mark, 2024). Yet regional evidence reveals enduring tensions between aspiration and
14 implementation. Sano et al. (2023) show that EMI instructors are often mandated rather than self-
15 motivated, while students pursue EMI mainly for employability rather than genuine intercultural
16 engagement. Such patterns create unequal linguistic burdens and amplify existing hierarchies (Yeh,
17 2023). As Sano et al. (2023) argue, effective bilingualization requires teacher training, pedagogical
18 flexibility, and multilingual pragmatism, an argument that resonates strongly in Taiwan's ongoing
19 policy experiment.
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23 Taiwan's Bilingual 2030 Policy (BN2030), launched in 2018, aspires to make the island a bilingual
24 nation by 2030 through mechanisms such as government funding for bilingual universities, English
25 proficiency benchmarks for civil servants, EMI teacher training, and bilingual administrative
26 reforms (Executive Yuan, 2018; Yeh, 2023). Taken together, these policy instruments indicate the
27 central role of bilingualization within Taiwan's broader higher education governance framework.
28 However, the literature also cautions that such institutionalization risks deepening inequality.
29 Ferrer and Lin (2024) describe official bilingualism as privileging English and Mandarin while
30 marginalizing other local tongues. Moreover, it emphasizes ideological contradictions between
31 bilingualism and multilingualism, warning that bilingualization often reproduces linguistic
32 hierarchies rather than dissolving them (Chang, 2025; Huang, 2024). Lin and Wu (2025) identify
33 inconsistencies between policy discourse and classroom practice, while Huang (2024) analyzes
34 EMI as a policy-driven mechanism that shapes international student recruitment patterns in Taiwan
35 with uneven effects across institutions of differing resource levels.
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39 In light of these findings, Taiwan's bilingualization project embodies both promise and unease.
40 While the BN2030 articulates goals related to internationalization and global engagement, existing
41 studies point to persistent asymmetries in power relations, pedagogical capacity, and institutional
42 preparedness. Within this landscape, international students, particularly those from Southeast Asia,
43 reveal gaps between policy discourse and institutional practice.
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46 ***2.2 Vietnamese Students in Taiwan's Bilingualization Landscape***

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48 Vietnamese students represent a significant group within Taiwan's educational internationalization
49 efforts (Overseas Community Affairs Council, 2025), reflecting the success of Taiwan's regional
50 outreach to Southeast Asia, including initiatives such as the famous New Southbound Policy (NSP)
51 that strengthened mobility networks (Nguyen et al., 2020; Overseas Community Affairs Council,
52 2025). Yet once in Taiwan, these students find themselves navigating an academic environment
53 increasingly shaped by the BN2030, where English and Mandarin coexist uneasily as dual media
54 of instruction (Yeh, 2023). This layered policy context shows how international students, shaped
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3 by mobility initiatives and adaptive reforms, become silent participants in broader reform
4 narratives.
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7 Two strands of research illuminate their experiences. Nguyen (2021) explored intercultural
8 communication among Vietnamese students in bilingual classrooms, showing how English
9 functions as a “neutral” medium that facilitates initial contact but often distances students from
10 local peers. Mandarin, conversely, fosters deeper connection and acceptance, yet the learning
11 curve remains steep (Nguyen, 2021; Wu, 2023). These linguistic negotiations demonstrate that
12 adaptation is not merely technical but relational rooted in trust, attraction, and the pursuit of
13 belonging (Feng, 2024; Nguyen, 2021). Complementing this micro-level insight, Nguyen et al.
14 (2020) situate Vietnamese students within Taiwan’s policy architecture, noting that affordability,
15 quality education, proximity, and bilingual advantage drive their study choices. However, students’
16 awareness of the policy framework enabling their mobility remains limited, suggesting a top-down
17 model of internationalization (Chu et al., 2018; Nguyen, 2021; Wu, 2023).
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21 Local empirical scholarship offers further depth. Yen (2023)’s thesis on Vietnamese students’
22 adjustments, found persistent gaps in language support, unequal EMI quality between public and
23 private institutions, and limited social integration. Students often rely on peer networks from their
24 home country to buffer academic and emotional stress. Viewed through the TASAM framework,
25 these patterns reveal how Trust and Attraction emerge through cross-cultural friendships; Structure
26 and Accomplishment are tested by language barriers and pedagogical inconsistency; and
27 Mobilization is reflected in students’ coping mechanisms, such as community reliance or self-
28 study (Chu et al., 2018; Nguyen, 2024; Nguyen, 2021; Walkinshaw et al., 2017; Wu, 2023; Yen,
29 2023). Through this lens, Vietnamese students exemplify the TASAM’s theorized transactional
30 adjustment process, in which coping, and mobilization practices emerge as critical responses to
31 structural and socio-cultural constraints within intersecting systems of policy, institutions, and
32 identity.
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36 Vietnamese students admirably navigate multiple linguistic and cultural terrains, even as
37 institutions often remain silent in the face of their struggles (Nguyen, 2024; Walkinshaw et al.,
38 2017). Their accounts illustrate how bilingualization policies are negotiated in everyday academic
39 and social contexts.
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41 ***2.3 Research Gap and Purpose***

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44 Although research on the BN2030 and EMI is expanding, most studies center on policy
45 frameworks, inequality, or teachers’ implementation challenges (Ferrer & Lin, 2024; Huang, 2024;
46 Lin & Wu, 2025). Few have examined how international students especially from Southeast Asia
47 experience bilingualization on the ground. Vietnamese postgraduates, Taiwan’s largest foreign
48 student group, remain underexplored despite their pivotal role in the nation’s internationalization
49 agenda. By applying the TASAM framework, this study seeks to interpret their adaptation across
50 four analytical domains: socio-cultural adjustment, academic challenges, financial strain, and
51 health and well-being, within the lived context of the BN2030. In doing so, it aims to bridge the
52 policy rhetoric and human experience, clarifying how bilingualization is felt, negotiated, and
53 redefined through the daily lives of those it intends to serve.
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3. METHODOLOGY

While Cheung's (2013) TASAM identifies multiple dimensions of international student adjustment, including language, academic, socio-cultural, and financial challenges, this study reorganizes these insights into four analytical domains to better reflect Vietnamese students' experiences in Taiwan's EMI context. Trust and Attraction are merged as *Socio-cultural Adjustment*, capturing identity negotiation, motivation, and belonging. Structure and Accomplishment are grouped as *Academic Challenges*, focusing on institutional delivery and classroom dynamics. *Financial Difficulties* are retained as a separate domain due to their policy relevance within Taiwan's scholarship and employment frameworks. Finally, *Health and Well-being* represents an outcome-oriented interpretation of Mobilization, emphasizing coping, self-care, and institutional responsiveness.

This study adopts a mixed-methods design, combining qualitative thematic analysis with computational text analysis (CTA) to examine challenges faced by international students in Taiwan's EMI programs. On the qualitative side, thematic analysis is applied to semi-structured interview data to explore students' lived experiences and contextual challenges. This is complemented by LDA, a machine learning technique widely used in CTA. LDA enables the identification of latent thematic patterns by modeling documents as mixtures of topics, and topics as mixtures of words (Ajinaja et al., 2023; Park et al., 2019). Though originally developed for natural language processing, LDA has proven effective across disciplines, including education (Veronica et al., 2023), where it supports applications such as analyzing student writing (Wheeler et al., 2024), extracting curriculum themes (Veronica et al., 2023), and mapping feedback to improve teaching (Nguyen et al., 2019). In this study, LDA is employed to uncover underlying themes from interview transcripts, enhancing interpretive depth and reducing researcher bias. All LDA analyses were conducted in Python 3.9.5 (Jupyter Notebook), with model parameters fine-tuned to ensure valid and coherent topic extraction. Integrating qualitative coding with topic modeling strengthens reliability and enables methodological triangulation.

Guided by the TASAM, this study organizes four analytical domains as research questions (RQs). Given the exploratory nature, these questions aim to uncover patterns of adaptation rather than test causal relationships:

RQ1: How do Vietnamese master students navigate socio-cultural adjustments in Taiwan's EMI environment?

RQ2: What academic challenges do they experience under the BN2030 framework?

RQ3: How do financial constraints and scholarship structures shape their adaptation to EMI programs?

RQ4: How do health and well-being issues affect their overall academic performance and adjustment in Taiwan?

Hence, these four RQs correspond to the four analytical domains adapted from the TASAM: Socio-cultural Adjustment (RQ1), Academic Challenges (RQ2), Financial Difficulties (RQ3), and Health and Well-being (RQ4).

Ethics and Funding

This study involved human participants and was conducted in accordance with standard ethical research practices. All participants were informed of the study purpose, the voluntary nature of participation, and their right to withdraw at any time. Written informed consent was obtained prior to each interview, and all data were anonymized during transcription and analysis to protect confidentiality.

In accordance with institutional guidelines at National Chengchi University (NCCU), Taiwan, this study did not require formal IRB review and was conducted under supervisory ethical oversight. This research received no external funding.

Data Description

To gain a deeper understanding of the experiences and perspectives of Vietnamese graduate students enrolled in EMI programs at various universities in Taiwan, a qualitative research methodology was employed. Specifically, six semi-structured interviews were conducted with international students from diverse academic institutions in Taiwan, including both public and private schools. Table 1 presents the data description using both conventional qualitative analysis and LDA-based processing. The sampling strategy aimed to capture varied perspectives on the challenges encountered in Taiwan's academic environment, providing a rich source of qualitative data. Participant recruitment was facilitated through snowball sampling, which leverages the social networks of initial participants to access a dispersed population, while acknowledging that this approach may reflect interconnected academic or social circles.

Table 1. The data description from interviews.

Panel A — Participant characteristics

ID	Degree (e.g., MA/MS)	Program/Discipline	Year of study	Gender (opt.)	Age (opt.)	English proficiency (CEFR)	Mandarin proficiency (CEFR)	Funding/Scholarship	Notes
S1	MBA	Global Business	1	Male	30	B2	A2	School Scholarship	Waived Tuition Fee Partly
S2	MA	International Communication Studies	1	Male	28	C1	A1	School Scholarship	Waived Tuition Fee
S3	MA	International Communication Studies	1	Female	27	C1	A1	School Scholarship	Waived Tuition Fee
S4	MBA	Business Administration	2	Male	30	C1	A1	Corporate Scholarships	In his 2 nd year
S5	MA	International Communication Studies	2	Female	28	C1	B2	School Scholarship	Waived Tuition Fee
S6	MA	Asia Pacific Studies	1	Female	32	C1	A1	No Scholarship	

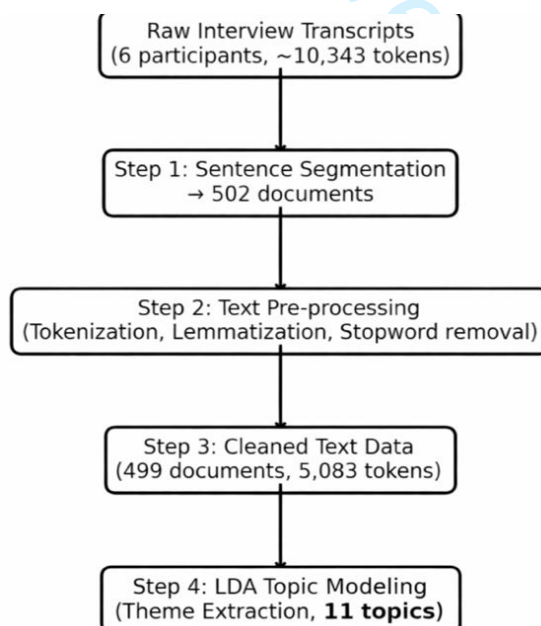
Panel B – Interview data

ID	File	Documents (sentences)	Total tokens (post-proc)	Unique tokens	Avg tokens / doc
S1	clean_Tuan 1.txt	55	737	413	13.4
S2	clean_Thuat 1.txt	68	800	468	11.8
S3	clean_Huyen 1.txt	82	846	449	10.3
S4	clean_Binh 1.txt	170	1218	627	7.2
S5	clean_Nhu 1.txt	74	885	426	12.0
S6	clean_Khanh 1.txt	50	601	350	12.02
Total (S1–S6)		499	5087	2733	10.17

LDA Data Preprocessing

As shown in Figure 1, each sentence from the six transcripts was treated as a separate ‘document,’ producing 502 documents in total. Within each document, words were segmented into ‘tokens.’ After filtering non-alphanumeric tokens, lemmatization, and stop-word removal, the vocabulary was reduced from 1,855 to 1,572 unique tokens, and the final dataset contained 499 documents with 5,083 tokens. This level of granularity allows the model to capture recurring themes across sentences rather than treating entire transcripts as single documents.

Figure 1. Data Preprocessing



4. RESULTS AND ANALYTICAL DOMAINS

Qualitative Results

Table II shows the main themes and codes that guided this analysis. The following four sections (4.1 to 4.4) explain each theme in more detail, using the sub-themes and quotes listed in the table.

4.1 Socio-cultural Adjustment (Theme 1, Table II)

The codes *Stereotyping and Discrimination* and *Language Barriers with Locals* (Table II) show that socio-cultural adjustment was one of the main challenges. Five of six students mentioned experiences of stereotyping or discrimination. S4 recalled being mistaken for Indonesian or Filipino because of darker skin, while S3 and S6 said some Taiwanese assumed Vietnamese came mainly to work, not study.

Most participants struggled with Mandarin in daily situations. As S6 said, *“Whenever I go to the hospital, most nurses speak Chinese.”* Limited English communication restricted both social contact and access to basic services.

Dormitory life also posed problems for three students (S1, S3, S4) who mentioned poor hygiene, noise, or mismatched schedules. These issues reduced comfort and further limited integration. Four participants (S2, S3, S4, S6) described difficulty forming friendships with local peers: *“I don’t really have Taiwanese friends here; they are hard to approach,”* S6 noted. Most instead bonded with other international students, creating a social divide.

Finally, one older student (S4, age 30) reported feeling excluded by younger classmates, highlighting age-related differences in classroom interaction.

4.2 Academic Challenges (Theme 2, Table II)

Academic difficulties were pervasive across participants. Four students (S1, S2, S4, S5) described challenges linked to professors’ limited English competence and the frequent use of Chinese in EMI classrooms. For instance, S1 shared: *“Professors use broken English; I had to find Vietnamese material first.”* Similarly, S4 found that even in EMI courses, professors often explained complex content in Chinese, creating learning gaps for non-Mandarin speakers.

A recurring issue was classroom participation and passivity. Three students (S2, S3, S5) noted that seminars were marked by silence, with Taiwanese classmates reluctant to debate or respond. S3 described presenting in class: *“When I asked questions after the presentation, classmates just looked down.”*

Teamwork and group projects also presented difficulties. Three students (S3, S4, S5) reported uneven contributions and differing attitudes, with some exchange or local students perceived as unserious. S4 emphasized: *“Some exchange students just want to have fun, not serious about study.”*

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3 Finally, one participant (S4) reported perceived bias in academic recognition, stating that
4 instructors favored students from developed countries: *“Teachers gave bonus points more easily*
5 *to Japanese or Korean peers.”*
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7 8 **4.3 Financial Strain (Theme 3, Table II)** 9

10 Financial pressures were another central challenge. Two participants (S3, S6) emphasized
11 scholarship insufficiency, where tuition was covered but not living expenses. As S6 explained:
12 *“Everything is expensive; hospital is costly.”*
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15 The need for part-time jobs was highlighted by three students (S1, S3, S4), who found employment
16 heavily dependent on Mandarin proficiency. Without Chinese skills, students were often limited
17 to restaurant or service jobs. S3 shared: *“Without Mandarin, hard to get jobs except in Vietnamese*
18 *restaurants”*. Balancing these jobs with study proved difficult.
19

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21 Family financial pressure was evident in two cases (S2, S3), where parents had to borrow money
22 or provide significant support. S3 admitted feeling compelled to ease her parents’ burden by
23 working part-time despite already high academic demands.
24

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26 Differences between public and private tuition structures were also noted (S5). While private
27 universities charged lump sums per semester, public institutions charged per credit, making the
28 overall cost higher. As S5 reported: *“Public school fees are up to 90,000 NTD on average for each*
29 *semester.”*
30

31 32 **4.4 Health and Well-being (Theme 4, Table II)** 33

34 The codes Stress and Mental Health and NHI Waiting Period (Table II) highlight health-related
35 issues that further complicated adaptation. Two students (S4, S6) mentioned delays before
36 National Health Insurance coverage. As S6 said, *“Without insurance, I avoid going to clinic; it is*
37 *too costly.”*
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40 Four others (S1, S3, S5, S6) reported stress from coursework and peer competition. S6 noted, *“At*
41 *first I felt really stressed; after three months I got used to it.”*
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44 Physical illness was also common. S3 said, *“Two severe flus since arriving; sudden climate shifts.”*
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47 Three students (S2, S3, S4) appreciated some university help, such as counseling centers and
48 arrival handbooks: *“The handbook listed banks and shop; really useful when I arrived,”* S2 said.
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Table II. Coding Framework of Interview Data

Theme	Sub-themes	Codes (examples)	Participants (n=6)	Exemplar Quote
1. Socio-cultural Adjustment	Stereotyping & Discrimination	“VN = migrant worker”; “dark skin → Filipino/Indonesian”	3 (S1, S3, S4)	S4: “They asked if I was Indonesian or Filipino because my skin looked dark.”
	Language barrier with locals	Difficulty at MRT, hospital, daily services	5 (S1, S3, S4, S6, S2)	S6: “Whenever I go to the hospital, most nurses speak Chinese, so it is stressful.”
	Dormitory lifestyle conflicts	Hygiene issues, noise, different schedules	3 (S1, S3, S4)	S4: “My roommates don’t clean... I often feel exhausted.”
	Limited local integration	Hard to befriend Taiwanese; stick with international peers	4 (S2, S3, S4, S6)	S6: “I don’t really have Taiwanese friends... they are hard to approach.”
	Age gap / peer pressure	Older student feeling isolated	1 (S4)	S4: “I was told I was the oldest in class, why study master’s at 30?”
2. Academic Challenges	Professors’ English competence	“Broken English lectures”; code-switching to Chinese	4 (S1, S2, S4, S5)	S1: “Professors use broken English... I had to find Vietnamese material first.”
	Classroom participation & passivity	Silence, lack of debate, passive classmates	3 (S2, S3, S5)	S3: “When I asked questions after the presentation, classmates just looked down.”
	Group work/teamwork issues	Uneven effort; cultural differences; exchange students unserious	3 (S3, S4, S5)	S4: “Some exchange students just want to have fun, not serious about study.”
	Bias in recognition	Preference for students from developed countries	1 (S4)	S4: “Teachers gave bonus points more easily to Japanese/Korean peers.”
3. Financial Strain	Scholarship insufficiency	Tuition covered but not living; still stressful	2 (S3, S6)	S6: “Everything is expensive, insurance delay makes hospital costly.”
	Need for part-time jobs	Mandarin-dependent jobs; restaurant work common	3 (S1, S3, S4)	S3: “Without Mandarin, hard to get jobs except in Vietnamese restaurants.”
	Family financial pressure	Parents borrowing money; guilt to contribute	2 (S3, S2)	S3: “I feel compelled to work so tuition won’t burden my parents.”
	Tuition differences (public vs. private)	Public universities per-credit more expensive	1 (S5)	S5: “Public school fees are up to 90,000 NTD in average for each semester; very expensive.”

Theme	Sub-themes	Codes (examples)	Participants (n=6)	Exemplar Quote
4. Health & Well-being	NHI waiting period / insurance gap	6-month wait, reliance on private insurance	2 (S4, S6)	S6: "Without insurance, I avoid going to clinic—it's too costly."
	Stress & mental health	Adjustment stress, workload anxiety	4 (S1, S3, S5, S6)	S6: "At first I felt really stressed... after 3 months I got used to it."
	Physical illness	Frequent flu due to weather changes	2 (S3, S2)	S3: "Two severe flus since arriving; sudden climate shifts."
	University support services	Counseling centers, handbooks, staff help	3 (S2, S3, S4)	S2: "The handbook listed banks, shops... really useful when I arrived."

Machine Learning Results

Optimizing the number of LDA topics is essential for generating meaningful and coherent thematic structures (Deveaud et al., 2014; Veronica et al., 2023). To enrich the qualitative findings, LDA helps explore the interview corpus (499 sentences from six transcripts). After testing different model settings, the best solution identified 11 coherent topics. Each topic is described by its most frequent keywords and illustrated with representative quotes from documents strongly associated with that topic ($\theta \geq 0.30$). This approach allows us to see how recurring themes in the students' experiences align with, and sometimes extend, the qualitative analysis.

Model Selection and Grid Search

To ensure robustness, we conducted a grid search over multiple parameter settings: $K \in \{6, 8, 10, 11, 12, 14, 16, 18\}$, $\alpha \in \{\text{symmetric, asymmetric}\}$, and $\eta \in \{\text{symmetric, } 0.01\}$, with 20 passes and 2000 iterations. Each configuration was run with 10 random seeds and mean \pm SD values were reported for coherence (c_v) and log-perplexity. Results showed that $\eta=0.01$ consistently produced low coherence ($\sim 0.44\text{--}0.45$) despite low perplexity, indicating poor interpretability. The two best-performing configurations were:

- $K=11$, $\alpha=\text{symmetric}$, $\eta=\text{symmetric}$: $c_v=0.475\pm 0.012$; perplexity= -7.54 ± 0.014 .
- $K=10$, $\alpha=\text{asymmetric}$, $\eta=\text{symmetric}$: $c_v=0.474\pm 0.011$; perplexity= -7.50 ± 0.018 .

Since $K=11$ achieved the highest coherence and was supported by the coherence curve, it was selected as the final model.

Human Validation

To assess interpretability, two independent coders (the first author and a peer researcher) manually assigned topic labels to 33 exemplar documents (top three per topic with the highest θ values). Inter-coder reliability was very high, with an agreement rate of 90.3% and Cohen's $\kappa = 0.86$. In

cases of disagreement during topic labeling, interpretations were discussed collaboratively and refined based on the semantic coherence of top keywords and representative excerpts until consensus was reached. This level of agreement indicates almost perfect reliability (Artstein & Poesio, 2008; Levin & Currie, 2014), confirming that the LDA-derived topics are both computationally robust and human-interpretable. Representative keywords and exemplar quotes are summarized in Table III.

Table III. LDA-Derived Topics with Keywords and Representative Quotes ($\theta \geq 0.30$)

Topic	Label	Top 10 Keywords	Representative Quote (θ , Doc ID)
1	Social integration & peer communication	people, help, everyone, vietnam, lot, communicate, taiwanese, different, group, master	“stayed in Taiwan for around 3 to 4 months... the biggest challenge was the language barrier.” ($\theta=0.837$, Doc 169)
2	Language barriers & self-improvement	get, solve, often, barrier, language, study, time, local, better, improve	“Looking ahead, I plan to adopt different strategies upon encountering challenges...” ($\theta=0.865$, Doc 20)
3	Classroom dynamics & intercultural interaction	student, class, taiwanese, taiwan, people, come, vietnamese, study, international, work	“Upon the conclusion of my presentation, I endeavored to stimulate discourse... but classmates disengaged.” ($\theta=0.911$, Doc 236)
4	Mandarin dependence & translation	chinese, use, mean, translate, important, overall, sometimes, google, not, seem	“Reassurance and expectations from society are sometimes difficult to translate into Chinese.” ($\theta=0.850$, Doc 111)
5	Financial stress	learning, country, money, challenge, effort, difference, taiwan, studying, financial	“Many peers need to allocate part of their earnings to support tuition and living expenses.” ($\theta=0.878$, Doc 99)
6	Program quality & workload	often, program, working, student, upper-class, available, explain, eat, instruction, certain	“I remain committed to taking a proactive approach to learning despite the heavy workload.” ($\theta=0.886$, Doc 96)
7	Health & academic pressure	time, health, learn, work, environment, information, take, subject, communication	“As a result, many students, particularly those in Chinese-medium programs, report stress and anxiety.” ($\theta=0.899$, Doc 45)
8	Dormitory & academic issues	living, academic, language, experience, challenge, dormitory, goal, enough, challenging	“MBA students sometimes find themselves overwhelmed by workload and dormitory life combined.” ($\theta=0.893$, Doc 77)
9	Friendship & social balance	however, taiwan, thing, friendship, really, space, university, avoid, balance	“The summary of language barriers and academic competition also shows impact on friendship.” ($\theta=0.940$, Doc 24)

Topic	Label	Top 10 Keywords	Representative Quote (θ , Doc ID)
10	EMI teaching quality	school, good, example, english, student, teacher, quite, not, difficult	“However, in classroom dynamics, I observed teachers struggling with EMI delivery.” ($\theta=0.888$, Doc 93)
11	Academic adjustment	student, school, make, come, challenge, taiwan, feel, country, academic	“Regarding administrative matters, my experience with the university’s international office has been excellent.” ($\theta=0.892$, Doc 90)

Table IV. Alignment between LDA Topics and Qualitative Themes

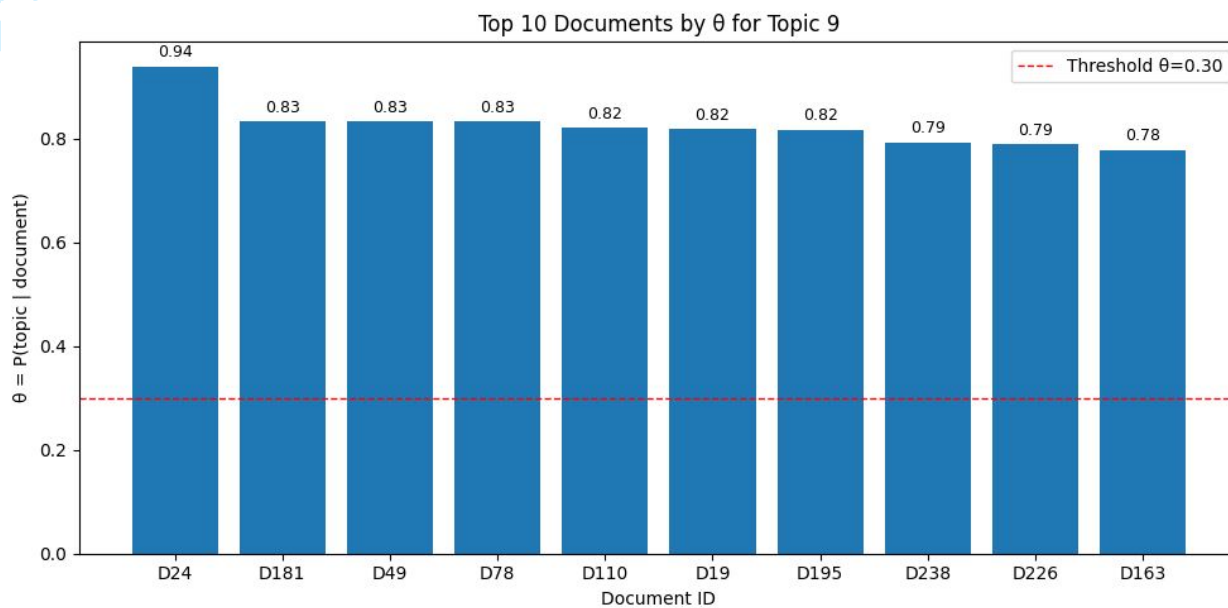
Qualitative Themes (Analytical Domains)	Corresponding LDA Topics (K=11)	Overlap and Reinforcement
Socio-cultural Adjustment	Topic 1: Social integration & peer communication; Topic 3: Classroom dynamics & intercultural interaction; Topic 9: Friendship & social balance	Both methods emphasize difficulties in building relationships, communication barriers, and cross-cultural tension.
Academic Challenges	Topic 4: Mandarin dependence & translation; Topic 6: Program quality & workload; Topic 10: EMI teaching quality; Topic 11: Academic adjustment	LDA expands the academic domain by exposing language-mix effects and course management issues.
Financial Difficulties	Topic 5: Financial stress; Topic 8: Dormitory & academic issues	Both analyses identify financial strain, cost-of-living gaps, and work-study conflicts.
Health and Well-being	Topic 2: Language barriers & self-improvement; Topic 7: Health & academic pressure	This domain reinforces stress, coping, and well-being challenges that correspond to the TASAM’s Mobilization component.

Document Relevance Threshold

We define the document relevance score as $\theta = P(\text{topic} | \text{document})$, which indicates the probability that a given document belongs to a specific topic. In our data, the values of θ ranged from very low (≈ 0.01) to very high (up to 0.94). This means that some sentences were only weakly related to a topic, while others were almost entirely representative of one topic.

To separate meaningful cases from weak overlaps, we applied a threshold of $\theta \geq 0.30$. Under this rule, a document is considered significantly associated with a topic if at least 30% of its content is explained by that topic. For example, Document 24 in Figure 3 reached $\theta = 0.94$ for Topic 9 and was treated as significant, whereas another document with $\theta = 0.014$ was considered non-significant. This cutoff retained between 5.6% and 12.8% of documents per topic, providing a sufficient pool of representative quotes while avoiding noise from marginal associations. Sensitivity checks at 0.25 and 0.35 produced consistent distributions, confirming the robustness of this choice.

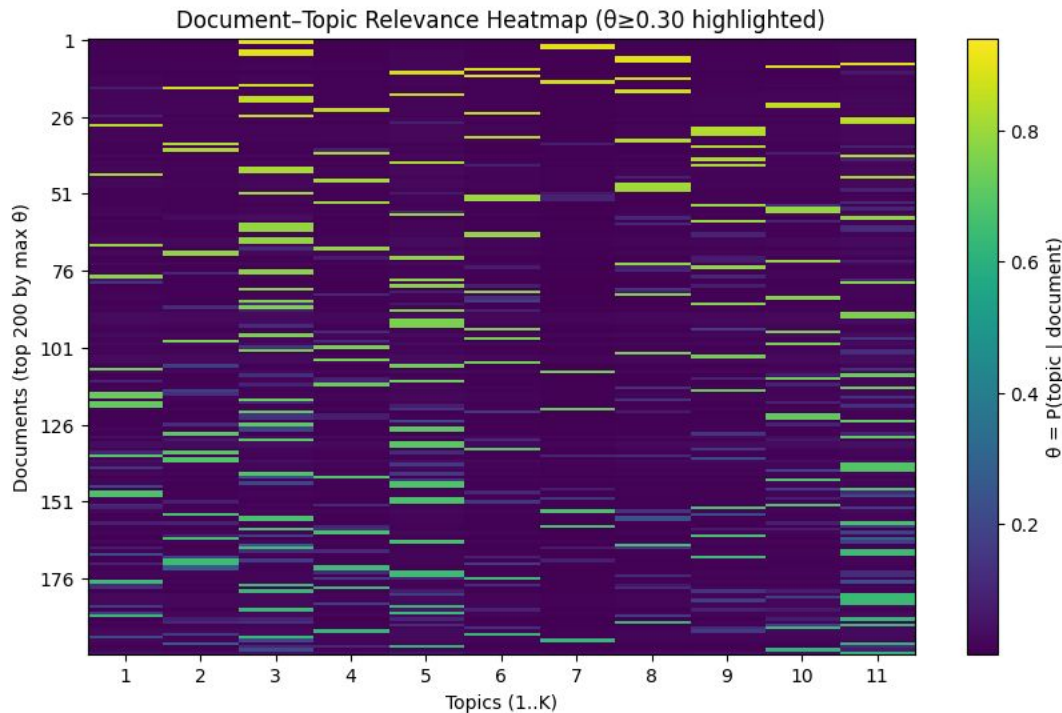
Figure 2. Top 10 documents by θ for Topic 9.



Each bar shows a document's posterior probability of belonging to Topic 9. Document 24 ($\theta=0.94$) is a clear exemplar, while all displayed documents exceed the significance threshold ($\theta \geq 0.30$).

Document–Topic Relevance Heatmap

Figure 3. Document–topic relevance heatmap ($\theta_{\{dk\}}$).



Each row represents a document (top 200 shown, sorted by maximum θ), and each column represents a topic ($K=11$). Color intensity indicates $\theta_{\{dk\}} = P(\text{topic } k | \text{document } d)$. Bright cells (yellow) denote strong associations ($\theta \geq 0.30$). The heatmap illustrates that most documents are strongly linked to one or two topics, supporting the interpretability of the extracted themes. Topics 3, 5, and 11 exhibit the highest coverage, while Topic 7 shows lower coverage, consistent with the distributional statistics reported in Table III. Figure 3, together with Table III and Table IV, demonstrates that the identified topics are both statistically coherent and conceptually aligned with the manually coded themes.

5. DISCUSSION

The four analytical domains identified through both thematic and LDA analyses show how Vietnamese students' adaptation is shaped by linguistic, academic, financial, and health-related dynamics.

Challenges Identified through Conventional Thematic Analysis

With respect to RQ1, these findings highlight the need for EMI programs that are responsive to linguistic and cultural diversity (Chu et al., 2018). In the present study, Chinese language proficiency emerged as a central factor influencing socio-cultural adjustment, as Vietnamese

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3 students frequently reported language barriers, difficulties in social integration, and experiences
4 of stereotyping or misrecognition (Chou et al., 2012; Chu et al., 2018; Wang & Shen, 2024).
5 Language-related challenges often limited students' ability to build friendships, engage
6 confidently in classroom activities, and feel socially included (Park et al., 2017).
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9 Many participants also reported hesitancy in expressing concerns or seeking institutional support,
10 which may lead to misunderstandings and feelings of isolation, with implications for well-being
11 (Nguyen, 2024; Park et al., 2017). Walkinshaw et al. (2017) emphasize the value of pre-enrollment
12 cultural orientation programs and ongoing language support; however, the present findings suggest
13 that institutional policies and EMI implementation strategies remain uneven, indicating a need for
14 clearer support frameworks, bilingual teaching practices, and sustained faculty development (Lai
15 & Idris, 2025).
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18 Addressing RQ2, despite the vision of the BN2030 to enhance English proficiency and
19 international competitiveness, findings suggest that its implementation often overlooks the
20 practical needs of international students. While EMI is promoted in principle, many universities
21 still rely heavily on Mandarin in lectures and communications, limiting accessibility and
22 engagement for non-Mandarin speakers. This misalignment between policy intent and classroom
23 practice reflects structural challenges in institutional implementation (Huang, 2024; Yeh, 2023).
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26 Beyond academics, students must adapt to unfamiliar living environments and cross-cultural
27 cohabitation, where university administration plays a crucial support role (Nguyen, 2024).
28 Stereotypes linking Vietnamese students to migrant labor further complicate adjustment and erode
29 their sense of belonging. Taiwanese social norms characterized by formality and
30 compartmentalization contrast with Vietnam's more communal culture, making informal
31 friendships difficult to establish. Traditional pedagogical norms emphasizing authority and limited
32 interaction may constrain participation, leading to more passive learning tendencies (Chu et al.,
33 2018; Wong & Hyde, 2024).
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36 Many graduate students continue to struggle with academic reading and writing in English, a
37 challenge compounded by limited instructional attention to language development and the scarcity
38 of formal research writing training at the graduate level (Nguyen, 2024; Wen et al., 2025). To
39 cope, students often rely on self-directed strategies such as enhancing critical thinking, adhering
40 to academic conventions, and managing time efficiently (Singh & Jack, 2022; Wen et al., 2025).
41 These patterns reaffirm that linguistic and pedagogical barriers remain central to student
42 adjustment and academic accomplishment in EMI programs.
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45 Concerning RQ3, financial constraints further intersect with linguistic and academic challenges,
46 shaping students' overall adaptation experiences. Prior studies emphasize the importance of
47 expanded, means-tested scholarships to support international students from lower-middle-income
48 backgrounds (Nguyen, 2024; Sheu et al., 2022). In the present study, however, tuition-focused
49 financial support appeared insufficient to address broader living and employment pressures faced
50 by Vietnamese graduate students. Despite receiving tuition assistance, many participants
51 encountered difficulties accessing part-time employment due to limited Mandarin proficiency,
52 constraining their ability to supplement living expenses. This paradox points to a policy tension in
53 which EMI is promoted academically, while socioeconomic participation remains largely
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3 Mandarin-dependent. As a result, financial support alone may be insufficient to ensure sustainable
4 student adaptation.
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7 As regards RQ4, financial and health-related challenges further highlight the limits of policy-level
8 bilingualization when institutional support remains uneven (Newton et al., 2021; Nguyen, 2021).
9 Beyond financial pressures, these health-related challenges show how accumulated stress can
10 undermine students' well-being when institutional safety nets are delayed or fragmented. The
11 findings suggest that tuition-focused financial assistance alone does not adequately address living,
12 employment, and well-being pressures faced by Vietnamese graduate students. Despite tuition
13 support, many participants faced barriers to part-time employment due to Mandarin dominance.
14 These challenges, combined with academic stress and delayed access to National Health Insurance
15 (NHI), led to uneven adaptation outcomes. This pattern points to a structural misalignment at the
16 policy level, where EMI is promoted academically while socioeconomic and well-being support
17 remains largely Mandarin-dependent, shaping uneven adaptation outcomes.
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20 *The Supplement from LDA Result*

21 *Academic-Cultural Nexus Reinforcement*

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23 LDA themes 1–4 and 6 directly corroborate conventional findings about academic stress (Newton
24 et al., 2021) and cultural adaptation (Chu et al., 2018), while adding granularity. Where thematic
25 analysis identified broad “language barriers,” LDA reveals more nuanced sub-challenges such as
26 workload management, educational system navigation, and healthcare access. Theme 5's focus on
27 language learning interactions provides additional insight into how linguistic struggles extend
28 beyond the classroom.
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32 *Systemic Barrier Elaboration*

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34 Themes 7–10 uncover structural issues that were only partially captured in manual coding. Theme
35 8's job-market challenges substantiate Sheu et al. (2022)'s financial concerns by evidencing
36 work–study balance struggles. Theme 10's focus on financial management nuances scholarship
37 debates by highlighting cost-of-living pressures. Theme 9's limited community support illustrates
38 how intra-diaspora networks shape adaptation, complementing Wong and Hyde (2024)'s findings
39 on discrimination.
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43 *Hidden Pattern Revelation*

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45 LDA also identified underexplored aspects such as technology adaptation and intra-community
46 relations. These findings suggest dual integration pressures, as students navigate assimilation into
47 Taiwanese society while negotiating expectations within their own cultural groups.
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50 *Advantages of LDA in Complementing Conventional Analysis*

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52 This dual-method approach demonstrated LDA's capacity to process large textual datasets and
53 uncover broader thematic patterns (Veronica et al., 2023; Wheeler et al., 2024). While manual
54 coding yielded four major themes, LDA produced eleven coherent topics, providing quantitative
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validation for qualitative insights (8/11 theme alignment). The identification of previously overlooked issues, such as technology adaptation and stress–health linkages, enriched interpretation. Together, computational and qualitative analyses strengthened evidence-based implications for EMI governance and international student support in Taiwan.

6. IMPLICATIONS

This study offers practical implications for improving EMI governance in Taiwan. Guided by the TASAM framework, the implications are organized by level of implementation, distinguishing between institutional practices and national policy considerations.

6.1 Institutional-Level Implications

At the institutional level, universities play a central role in shaping international students' everyday academic and social experiences within EMI contexts (Tamtam et al., 2012; Walkinshaw et al., 2017; Wang & Shen, 2024; Wong & Hyde, 2024).

- *Under Socio-cultural Adjustment (Trust & Attraction)*, universities can strengthen social confidence and engagement through structured peer-mentorship and intercultural activities.
- *Under Academic Challenges (Structure & Accomplishment)*, institutions should ensure bilingual administrative communication, conduct EMI teaching audits, and provide discipline-specific EAP and academic writing support.
- *Under Financial Difficulties*, universities may expand assistantships and develop appropriate part-time job channels aligned with students' academic schedules.
- *Under Health and Well-being (Mobilization)*, early-arrival health briefings can help address the NHI waiting period and promote timely access to healthcare.

These institutional-level measures directly respond to the socio-cultural, academic, financial, and health-related challenges identified through both thematic and LDA analyses, reinforcing the TASAM's emphasis on institutional responsiveness to student adaptation.

6.2 National Policy-Level Implications

At the national level, existing research underscores the importance of aligning EMI initiatives with broader language, employment, and student welfare policies to support sustainable internationalization (Huang, 2024; Nguyen et al., 2020; Phyak, 2024).

The findings suggest that closer coordination between the BN2030 and complementary support systems is needed to address structural tensions identified in this study. In particular, aligning EMI promotion with expanded Mandarin learning opportunities, inclusive student employment frameworks, and more consistent health-access arrangements may help reduce disparities between policy intentions and students' lived experiences. Such policy-level adjustments could support more equitable and sustainable implementation of the BN2030 beyond the classroom.

7. LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. The small sample size and snowball recruitment limit the generalizability of the findings, reflecting the exploratory nature of the research rather than a representative design. While the LDA model provided complementary insights, its application to a relatively small corpus may have constrained topic granularity despite validation procedures. Reflexively, the first author's positionality as a Vietnamese doctoral student in Taiwan facilitated rapport but required attentiveness to potential interpretive bias. Interviews were conducted in Vietnamese and translated into English, with bilingual checks to preserve meaning. Due to confidentiality considerations, the data cannot be publicly shared but may be made available upon reasonable request.

Future research could extend this study by incorporating larger and more diverse samples across different institutional contexts to enhance generalizability. Longitudinal and comparative designs may further clarify how mobilization practices and health-related outcomes evolve across different EMI systems in East Asia.

8. CONCLUSION

In conclusion, this analysis explored the experiences of Vietnamese students in EMI programs, using a mixed-method approach with the TASAM framework which provided a robust and coherent lens that enabled students to articulate their adaptation experiences. Conventional thematic analysis of interview data revealed four primary themes: socio-cultural adjustments, academic challenges, financial difficulties, and health and well-being challenges. Eleven sub-themes detailed the multifaceted challenges these students face in a foreign academic environment, including language barriers, social integration difficulties, financial strain, and healthcare access (Chu et al., 2018; Newton et al., 2021; Sheu et al., 2022).

The application of LDA provided a complementary perspective, consolidating and reinforcing the validity of the primary themes and their interconnectedness through interview data (Hussein, 2009; Veronica et al., 2023). LDA helped confirm the critical challenges faced by Vietnamese students, thereby enhancing the reliability and trustworthiness of the qualitative findings (Ajinaja et al., 2023; Park et al., 2019). This iterative process validated the research outcomes while highlighting the importance of method triangulation in capturing comprehensive results (Hussein, 2009).

Vietnamese students represent an important human resource for Taiwan's higher education system. This research offers several important contributions to Taiwan's educational policies and governance in relation to EMI. Beyond the overarching BN2030, which sets a broad vision for enhancing English proficiency (Chang, 2025; Yeh, 2023), the findings can inform more granular policies and institutional practices that directly affect international students showing that this is a lesson for others to help enhance the right internationalization in education. The goal of internationalization should be to simplify institutional systems for international students, not to create additional challenges (Gyamera & Asare, 2023). Within this study, insights can help universities refine student support programs, design culturally responsive curricula, and allocate resources more effectively to address the specific needs of Vietnamese students. For example, universities can leverage these findings to develop targeted language support programs, and

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3 technological updates, enhance financial aid opportunities, and create inclusive social
4 environments that enhance greater integration and belonging (Lin et al., 2024). Universities should
5 also review and update admissions policies to ensure that Vietnamese students are adequately
6 prepared for EMI-related challenges. Furthermore, these findings can inform the development of
7 training programs for faculty and staff to enhance their cultural competence and ability to support
8 international students effectively (Bolton et al., 2023; Lai & Idris, 2025; Nguyen, 2024).
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11 Ultimately, this study contributes to a more equitable and effective educational experience for not
12 only Vietnamese but all students, reinforcing Taiwan's position as a global leader in international
13 education and promoting a globalized and interconnected academic community.
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Navigating Bilingualization: Challenges and Adaptation of Vietnamese Master's Students in English-Medium Instruction under Taiwan's Bilingual 2030 Policy

ABSTRACT

Purpose – This study investigates the challenges faced by Vietnamese master's students enrolled in bilingual and English-Medium Instruction (EMI) programs in Taiwan. It examines how institutional, linguistic, cultural, financial, and health-related factors shape their academic and social adaptation within the bilingualization framework of Taiwan's Bilingual 2030 Policy (BN2030). By doing so, it highlights implementation gaps and the sociolinguistic tensions embedded in Taiwan's push for bilingual higher education.

Design/methodology/approach – A mixed-methods design was employed. Six semi-structured interviews with Vietnamese master's students were analyzed using thematic analysis to capture lived experiences. To complement these qualitative insights, Latent Dirichlet Allocation (LDA) topic modeling was applied to the interview transcripts, enabling computational validation of emerging themes. The research adapts Cheung's (2013) Transactional Acculturation Stress and Adjustment Model (TASAM) to interpret the dynamic process of adaptation.

Findings – Four major challenges emerged: socio-cultural adjustment, academic challenges, financial constraints, and health and well-being challenges. Students reported uneven EMI delivery, linguistic hierarchies, limited institutional support, and reliance on peer networks. LDA analysis confirmed these patterns and revealed hidden subthemes of identity negotiation and coping strategies.

Originality/value – This study contributes by combining qualitative and computational approaches under a single framework (TASAM-LDA). It provides new insights into how Southeast Asian students experience Taiwan's bilingualization in practice and suggests directions for more inclusive EMI implementation.

Keywords: EMI challenges, thematic analysis, LDA topic modeling, TASAM, international student adaptation, higher education, Vietnamese students, BN2030

1. INTRODUCTION

The rise of internationalization has positioned English-Medium Instruction (hereafter EMI) at the forefront of higher education strategies across Asia, as institutions seek to enhance global competitiveness, attract talent, and improve rankings (Lai & Idris, 2025; Nguyen et al., 2019; Phyak, 2024). In Taiwan, this momentum is exemplified by the 2030 Bilingual Policy (hereafter BN2030), which aims to boost English proficiency and international visibility through expanded EMI offerings (Chang, 2025; Lin et al., 2024; Yeh, 2023). However, the rapid rollout of EMI policies has been widely associated with gaps between policy design and classroom practice. However, the rapid rollout of such policies highlights the need for better support structures for both faculty and students (Chang, 2025; Chu et al., 2018; Huang, 2024; Nguyen, 2021). (Chu, 2018 #34; Huang, 2024 #66; Nguyen, 2021 #78)

Despite its promise, EMI implementation continues to pose persistent challenges, particularly linguistic barriers, cultural adjustment issues, and limited academic and social integration for international students (Chu et al., 2018; Newton et al., 2021; Nguyen, 2021; Sheu et al., 2022; Wang & Shen, 2024; Wong & Hyde, 2024). These issues often result in uneven learning outcomes and dissatisfaction, particularly when classroom language use fluctuates or support mechanisms are lacking (Lai & Idris, 2025; Walkinshaw et al., 2017).

The Vietnamese student population is a major component of Taiwan's international enrollment, accounting for 39,695 students during the 2024 academic year (Overseas Community Affairs Council, 2025). This research focuses on Vietnamese master's students, whose advanced-level study offers deeper insights into EMI adaptation and institutional support. Attracted by regional policies and economic opportunity, they face distinct pressures: linguistic limitations, cultural dissonance, financial strain, and their health adaptation (Chou et al., 2012; Lin & Ivinson, 2012; Newton et al., 2021). These stressors, compounded by rising tuition and limited social inclusion, negatively affect students' academic performance and lives (Gribble, 2011; Sheu et al., 2022).

To address these complexities, this study adopts the Transactional Acculturation Stress and Adjustment Model (TASAM) and employs a mixed-methods approach. Combining qualitative thematic analysis with Latent Dirichlet Allocation (LDA) is a machine learning tool used to uncover hidden patterns in text. Therefore, this study aims to explore how Vietnamese master's students adapt to Taiwan's bilingual and English-Medium Instruction (EMI) environments under the Bilingual 2030 policy, using the TASAM as an interpretive framework.

2. LITERATURE REVIEWS

2.1 Theoretical and Regional Context

Understanding international students' adaptation requires an appreciation of the interplay between individual agency and institutional environment. Building on Cheung (2013)'s study of acculturation stress among mainland Chinese students in Hong Kong, this study adapts the conceptual lens of the *Transactional Acculturation Stress and Adjustment Model (TASAM)*. Although Cheung did not formally name this model, his findings on language, academic, socio-cultural, and financial adaptation inspired an analytical synthesis in this study into five relational

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~~domains~~the synthesis of five domains—**Trust, Attraction, Structure, Accomplishment, and Mobilization**—that describe how individuals navigate cultural and institutional transitions. The TASAM frames adaptation as a transactional process in which stress and coping evolve through ongoing exchanges between the self and the system, consistent with interactional and ecological perspectives on international student adjustment (Cheung, 2013; Gill, 2007; Singh & Jack, 2022)(Cheung, 2013; Gill, 2007 #31; Singh & Jack, 2022);(Cheung, 2013; Gill, 2007; Singh & Jack, 2022). This study applies this lens to examine Vietnamese students' negotiations of bilingual academic settings shaped by Taiwan's national language policy.

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Across East Asia, **English-Medium Instruction (EMI)** has become a flagship of educational internationalization. Japan's Global 30 and Top Global University projects, Study Korea 300K Project, and Taiwan's Bilingual 2030 Policy reflect shared ambitions to enhance global competitiveness (Bolton et al., 2023; Kwon, 2024; Mark, 2024). (Bolton et al., 2023; Kwon, 2024; Mark, 2024). Yet regional evidence reveals enduring tensions between aspiration and implementation. Sano et al. (2023) show that EMI instructors are often mandated rather than self-motivated, while students pursue EMI mainly for employability rather than genuine intercultural engagement. Such patterns create unequal linguistic burdens and amplify existing hierarchies (Yeh, 2023). As Sano et al. (2023) argue, effective bilingualization requires teacher training, pedagogical flexibility, and multilingual pragmatism, an argument that resonates strongly in Taiwan's ongoing policy experiment.

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Taiwan's **Taiwan's Bilingual 2030 Policy (BN2030)**, launched in 2018, aspires to make the island a bilingual nation by 2030 through mechanisms such as government funding for bilingual universities, English proficiency benchmarks for civil servants, EMI teacher training, and bilingual administrative reforms (Executive Yuan, 2018; Yeh, 2023). (Republic Of China Executive Yuan, 2018; R.O.C. Executive Yuan, 2018; Yeh, 2023). Taken together, these policy instruments indicate the central role of bilingualization within Taiwan's broader higher education governance framework. These instruments illustrate how bilingualization has become structurally embedded in Taiwan's national development agenda. However, the literature also cautions that such institutionalization risks deepening inequality. Ferrer and Lin (2024) describe official bilingualism as privileging English and Mandarin while marginalizing other local tongues. Moreover, it emphasizes ideological contradictions between bilingualism and multilingualism, warning that bilingualization often reproduces linguistic hierarchies rather than dissolving them (Chang, 2025; Huang, 2024). Lin and Wu (2025) identify inconsistencies between policy discourse and classroom practice, while Huang (2024) analyzes EMI as a policy-driven mechanism that shapes international student recruitment patterns in Taiwan with uneven effects across institutions of differing resource levels. highlights how EMI operates as a market strategy for recruiting Southeast Asian students, inadvertently widening gaps between elite and peripheral institutions.

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In light of these findings, Taiwan's bilingualization project embodies both promise and unease. While the BN2030 articulates goals related to internationalization and global engagement, existing studies point to persistent asymmetries in power relations, pedagogical capacity, and institutional preparedness. On paper, the BN2030 symbolizes openness and global ambition. In practice, it exposes asymmetries of power, pedagogy, and preparedness. Within this landscape, international students, particularly those from Southeast Asia, reveal gaps between policy discourse and institutional practice, become the measure of how far policy rhetoric travels before meeting reality.

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2.2 Vietnamese Students in Taiwan's Bilingualization Landscape

Vietnamese students represent a significant group within Taiwan's educational internationalization efforts. Vietnamese students represent the most visible faces of Taiwan's educational internationalization (Overseas Community Affairs Council, 2025), reflecting the success of Taiwan's regional outreach to Southeast Asia, including initiatives such as the famous New Southbound Policy (NSP) that strengthened mobility networks (Nguyen et al., 2020; Overseas Community Affairs Council, 2025). Yet once in Taiwan, these students find themselves navigating an academic environment increasingly shaped by the BN2030, where English and Mandarin coexist uneasily as dual media of instruction (Yeh, 2023). This layered policy context shows how international students, shaped by mobility initiatives and adaptive reforms, become silent participants in broader reform narratives.

Two strands of research illuminate their experiences. Nguyen (2021) explored intercultural communication among Vietnamese students in bilingual classrooms, showing how English functions as a "neutral" medium that facilitates initial contact but often distances students from local peers. Mandarin, conversely, fosters deeper connection and acceptance, yet the learning curve remains steep (Wu, 2023 #14; Nguyen, 2021; Wu, 2023). These linguistic negotiations demonstrate that adaptation is not merely technical but relational rooted in trust, attraction, and the pursuit of belonging (Feng, 2024; Nguyen, 2021). Complementing this micro-level insight, Nguyen et al. (2020) situate Vietnamese students within Taiwan's policy architecture, noting that affordability, quality education, proximity, and bilingual advantage drive their study choices. However, students' awareness of the policy framework enabling their mobility remains limited, suggesting a top-down model of internationalization (Chu et al., 2018; Nguyen, 2021; Wu, 2023) (Chu et al., 2018; Nguyen, 2021; Wu, 2023).

Local empirical scholarship offers further depth. Yen (2023)'s thesis on Vietnamese students' adjustments, found persistent gaps in language support, unequal EMI quality between public and private institutions, and limited social integration. Students often rely on peer networks from their home country to buffer academic and emotional stress. Viewed through the TASAM framework, these patterns reveal how Trust and Attraction emerge through cross-cultural friendships; Structure and Accomplishment are tested by language barriers and pedagogical inconsistency; and Mobilization is reflected in students' coping mechanisms, such as community reliance or self-study. These patterns correspond closely with the TASAM framework. Trust and Attraction emerge through cross-cultural friendships; Structure and Accomplishment are tested by language barriers and pedagogical inconsistency; and Mobilization is reflected in students' coping mechanisms, such as community reliance or self-study (Chu et al., 2018; Nguyen, 2024; Nguyen, 2021; Walkinshaw et al., 2017; Wu, 2023; Yen, 2023). Through this lens, Vietnamese students exemplify the TASAM's theorized transactional adjustment process, in which coping, and mobilization practices emerge as critical responses to structural and socio-cultural constraints within intersecting systems of policy, institutions, and identity, adapting within intersecting systems of policy, institutions, and identity.

Vietnamese students admirably navigate multiple linguistic and cultural terrains, even as institutions often remain silent in the face of their struggles (Nguyen, 2024; Walkinshaw et al., 2017) (Walkinshaw et al., 2017; Nguyen, 2024 #53). Their accounts illustrate how

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bilingualization policies are negotiated in everyday academic and social contexts. Their voices humanize Taiwan's bilingualization experiment, transforming policy abstractions into lived negotiations of meaning and belonging.

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2.3 Research Gap and Purpose

Although research on the BN2030 and EMI is expanding, most studies center on policy frameworks, inequality, or teachers' implementation challenges (Ferrer & Lin, 2024; Huang, 2024; Lin & Wu, 2025). Few have examined how international students especially from Southeast Asia experience bilingualization on the ground. Vietnamese postgraduates, Taiwan's largest foreign student group, remain underexplored despite their pivotal role in the nation's internationalization agenda. By applying the TASAM framework, this study seeks to interpret their adaptation across four analytical domains: socio-cultural adjustment, academic challenges, financial strain, and health and well-being, within the lived context of: the BN2030 Taiwan's bilingual and EMI policies. In doing so, it aims to bridge the policy rhetoric and human experience, clarifying how bilingualization is felt, negotiated, and redefined through the daily lives of those it intends to serve.

3. METHODOLOGY

While Cheung's (2013) Transactional Acculturation Stress and Adjustment Model (TASAM) identifies multiple dimensions of international student adjustment, including language, academic, socio-cultural, and financial challenges, this study reorganizes these insights into four analytical domains to better reflect Vietnamese students' experiences in Taiwan's EMI context. identifies five domains—Trust, Attraction, Structure, Accomplishment, and Mobilization—this study reorganizes them into four analytical domains to better reflect Vietnamese students' experiences in Taiwan's EMI context. Trust and Attraction are merged as *Socio-cultural Adjustment*, capturing identity negotiation, motivation, and belonging. Structure and Accomplishment are grouped as *Academic Challenges*, focusing on institutional delivery and classroom dynamics. ~~Financial Difficulties are retained as a separate domain due to their policy relevance within Taiwan's scholarship and employment frameworks.~~ Financial Difficulties are retained as a separate domain due to their policy relevance within Taiwan's scholarship and employment frameworks. Finally, *Health and Well-being* represents an outcome-oriented interpretation of Mobilization, emphasizing coping, self-care, and institutional responsiveness.

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This study adopts a mixed-methods design, combining qualitative thematic analysis with computational text analysis (CTA) to examine challenges faced by international students in Taiwan's EMI programs. On the qualitative side, thematic analysis is applied to semi-structured interview data to explore students' lived experiences and contextual challenges. This is complemented by ~~Latent Dirichlet Allocation (LDA)~~, a machine learning technique widely used in CTA. LDA enables the identification of latent thematic patterns by modeling documents as mixtures of topics, and topics as mixtures of words (Ajinaja et al., 2023; Park et al., 2019). Though originally developed for natural language processing, LDA has proven effective across disciplines, including education- (Veronica et al., 2023) (S. F. Veronica et al., 2023) (Veronica et al., 2023), where it supports applications such as analyzing student writing (Wheeler et al., 2024), extracting curriculum themes- (Veronica et al., 2023) (Veronica et al., 2023), and mapping feedback to improve teaching (Nguyen et al., 2019). In this study, LDA is employed to uncover underlying

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themes from interview transcripts, enhancing interpretive depth and reducing researcher bias. All LDA analyses were conducted in Python 3.9.5 (Jupyter Notebook), with model parameters fine-tuned to ensure valid and coherent topic extraction. Integrating qualitative coding with topic modeling strengthens reliability and enables methodological triangulation.

Guided by the TASAM, this study organizes four analytical domains as research questions (RQs). Given the exploratory nature, these questions aim to uncover patterns of adaptation rather than test causal relationships:

RQ1: How do Vietnamese master students navigate socio-cultural adjustments in Taiwan's EMI environment?

RQ2: What academic challenges do they experience under the bilingual policy BN2030 framework?

RQ3: How do financial constraints and scholarship structures shape their adaptation to EMI programs?

RQ4: How do health and well-being issues affect their overall academic performance and adjustment in Taiwan?

Hence, these four RQs correspond to the four analytical domains adapted from the TASAM: Socio-cultural Adjustment (RQ1), Academic Challenges (RQ2), Financial Difficulties (RQ3), and Health and Well-being (RQ4).

Hence, these four RQs correspond to the core analytical domains derived from TASAM—Trust & Attraction (RQ1), Structure & Accomplishment (RQ2–RQ3), and Mobilization (RQ4).

Ethics and Funding

This study involved human participants and was conducted in accordance with standard ethical research practices. All participants were informed of the study purpose, the voluntary nature of participation, and their right to withdraw at any time. Written informed consent was obtained prior to each interview, and all data were were anonymized during transcription and analysis to protect confidentiality. The study was conducted under a Research Ethics Self-Declaration approved through supervisory oversight at National Chengchi University (NCCU), Taiwan. This research received no external funding.

In accordance with institutional guidelines at National Chengchi University (NCCU), Taiwan, this study did not require formal IRB review and was conducted under supervisory ethical oversight. This research received no external funding.

Data Description

To gain a deeper understanding of the experiences and perspectives of Vietnamese graduate students enrolled in English Medium Instruction (EMI) programs at various universities in Taiwan, a qualitative research methodology was employed. Specifically, six semi-structured interviews

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were conducted with international students from diverse academic institutions in Taiwan, including both public and private schools. Table 1 presents the data description using both conventional qualitative analysis and LDA-based processing. The sampling strategy aimed to capture varied perspectives on the challenges encountered in Taiwan's academic environment, providing a rich source of qualitative data. Participant recruitment was facilitated through snowball sampling, which leverages the social networks of initial participants to access a dispersed population, while acknowledging that this approach may reflect interconnected academic or social circles.

Table 1. The data description from interviews.

Panel A — Participant characteristics

ID	Degree (e.g., MA/MS)	Program/Discipline	Year of study	Gender (opt.)	Age (opt.)	English proficiency (CEFR)	Mandarin proficiency (CEFR)	Funding/Scholarship	Notes
S1	MBA	Global Business	1	Male	30	B2	A2	School Scholarship	Waived Tuition Fee Partly
S2	MA	International Communication Studies	1	Male	28	C1	A1	School Scholarship	Waived Tuition Fee
S3	MA	International Communication Studies	1	Female	27	C1	A1	School Scholarship	Waived Tuition Fee
S4	MBA	Business Administration	2	Male	30	C1	A1	Corporate Scholarships	In his 2 nd year
S5	MA	International Communication Studies	2	Female	28	C1	B2	School Scholarship	Waived Tuition Fee
S6	MA	Asia Pacific Studies	1	Female	32	C1	A1	No Scholarship	

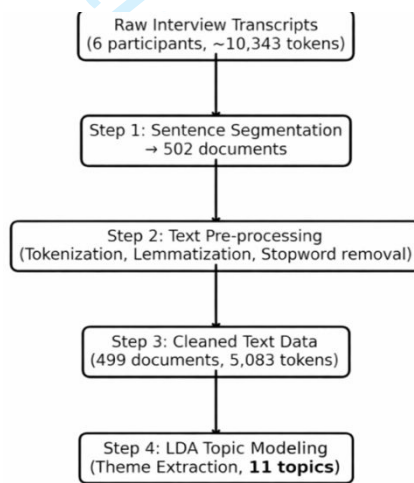
Panel B – Interview data

ID	File	Documents (sentences)	Total tokens (post-proc)	Unique tokens	Avg tokens / doc
S1	clean_Tuan 1.txt	55	737	413	13.4
S2	clean_Thuat 1.txt	68	800	468	11.8
S3	clean_Huyen 1.txt	82	846	449	10.3
S4	clean_Binh 1.txt	170	1218	627	7.2
S5	clean_Nhu 1.txt	74	885	426	12.0
S6	clean_Khanh 1.txt	50	601	350	12.02
Total (S1–S6)		499	5087	2733	10.17

LDA Data Preprocessing

As shown in Figure 1, each sentence from the six transcripts was treated as a separate ‘document,’ producing 502 documents in total. Within each document, words were segmented into ‘tokens.’ After filtering non-alphanumeric tokens, lemmatization, and stop-word removal, the vocabulary was reduced from 1,855 to 1,572 unique tokens, and the final dataset contained 499 documents with 5,083 tokens. This level of granularity allows the model to capture recurring themes across sentences rather than treating entire transcripts as single documents.

Figure 1. Data Preprocessing



4. RESULTS AND ANALYTICAL DOMAINS

Qualitative Results

Table II shows the main themes and codes that guided this analysis. The following four sections (4.1 to 4.4) explain each theme in more detail, using the sub-themes and quotes listed in the table.

4.1 Socio-cultural Adjustment (Theme 1, Table II)

The codes *Stereotyping and Discrimination* and *Language Barriers with Locals* (Table II) show that socio-cultural adjustment was one of the main challenges. Five of six students mentioned experiences of stereotyping or discrimination. S4 recalled being mistaken for Indonesian or Filipino because of darker skin, while S3 and S6 said some Taiwanese assumed Vietnamese came mainly to work, not study.

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10 Most participants struggled with Mandarin in daily situations. As S6 said, *"Whenever I go to the*
11 *hospital, most nurses speak Chinese."* Limited English communication restricted both social
12 contact and access to basic services.

13 Dormitory life also posed problems for three students (S1, S3, S4) who mentioned poor hygiene,
14 noise, or mismatched schedules. These issues reduced comfort and further limited integration. Four
15 participants (S2, S3, S4, S6) described difficulty forming friendships with local peers: *"I don't*
16 *really have Taiwanese friends here; they are hard to approach,"* S6 noted. Most instead bonded
17 with other international students, creating a social divide.

18 Finally, one older student (S4, age 30) reported feeling excluded by younger classmates,
19 highlighting age-related differences in classroom interaction.

20 21 **4.2 Academic Challenges (Theme 2, Table II)**

22 Academic difficulties were pervasive across participants. Four students (S1, S2, S4, S5) described
23 challenges linked to professors' limited English competence and the frequent use of Chinese in
24 EMI classrooms. For instance, S1 shared: *"Professors use broken English; I had to find*
25 *Vietnamese material first."* Similarly, S4 found that even in EMI courses, professors often
26 explained complex content in Chinese, creating learning gaps for non-Mandarin speakers.

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28 A recurring issue was classroom participation and passivity. Three students (S2, S3, S5) noted that
29 seminars were marked by silence, with Taiwanese classmates reluctant to debate or respond. S3
30 described presenting in class: *"When I asked questions after the presentation, classmates just*
31 *looked down."*

32 Teamwork and group projects also presented difficulties. Three students (S3, S4, S5) reported
33 uneven contributions and differing attitudes, with some exchange or local students perceived as
34 unserious. S4 emphasized: *"Some exchange students just want to have fun, not serious about study."*

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36 Finally, one participant (S4) reported perceived bias in academic recognition, stating that
37 instructors favored students from developed countries: *"Teachers gave bonus points more easily*
38 *to Japanese or Korean peers."*

39 40 **4.3 Financial Strain (Theme 3, Table II)**

41 Financial pressures were another central challenge. Two participants (S3, S6) emphasized
42 scholarship insufficiency, where tuition was covered but not living expenses. As S6 explained:
43 *"Everything is expensive; hospital is costly."*

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45 The need for part-time jobs was highlighted by three students (S1, S3, S4), who found employment
46 heavily dependent on Mandarin proficiency. Without Chinese skills, students were often limited
47 to restaurant or service jobs. S3 shared: *"Without Mandarin, hard to get jobs except in Vietnamese*
48 *restaurants"*. Balancing these jobs with study proved difficult.

Family financial pressure was evident in two cases (S2, S3), where parents had to borrow money or provide significant support. S3 admitted feeling compelled to ease her parents' burden by working part-time despite already high academic demands.

Differences between public and private tuition structures were also noted (S5). While private universities charged lump sums per semester, public institutions charged per credit, making the overall cost higher. As S5 reported: *"Public school fees are up to 90,000 NTD on average for each semester."*

4.4 Health and Well-being (Theme 4, Table II)

The codes Stress and Mental Health and NHI Waiting Period (Table II) highlight health-related issues that further complicated adaptation. Two students (S4, S6) mentioned delays before National Health Insurance coverage. As S6 said, *"Without insurance, I avoid going to clinic; it is too costly."*

Four others (S1, S3, S5, S6) reported stress from coursework and peer competition. S6 noted, *"At first I felt really stressed; after three months I got used to it."*

Physical illness was also common. S3 said, *"Two severe flus since arriving; sudden climate shifts."*

Three students (S2, S3, S4) appreciated some university help, such as counseling centers and arrival handbooks: *"The handbook listed banks and shop; really useful when I arrived,"* S2 said.

Table II. Coding Framework of Interview Data

Theme	Sub-themes	Codes (examples)	Participants (n=6)	Exemplar Quote
1. Socio-cultural Adjustment	Stereotyping & Discrimination	"VN = migrant worker"; "dark skin → Filipino/Indonesian"	3 (S1, S3, S4)	S4: "They asked if I was Indonesian or Filipino because my skin looked dark."
	Language barrier with locals	Difficulty at MRT, hospital, daily services	5 (S1, S3, S4, S6, S2)	S6: "Whenever I go to the hospital, most nurses speak Chinese, so it is stressful."
	Dormitory lifestyle conflicts	Hygiene issues, noise, different schedules	3 (S1, S3, S4)	S4: "My roommates don't clean... I often feel exhausted."

Theme	Sub-themes	Codes (examples)	Participants (n=6)	Exemplar Quote
2. Academic Challenges	Limited local integration	Hard to befriend Taiwanese; stick with international peers	4 (S2, S3, S4, S6)	S6: "I don't really have Taiwanese friends... they are hard to approach." S4: "I was told I was the oldest in class, why study master's at 30?"
	Age gap / peer pressure	Older student feeling isolated	1 (S4)	S1: "Professors use broken English... I had to find Vietnamese material first."
	Professors' English competence	"Broken English lectures"; code-switching to Chinese	4 (S1, S2, S4, S5)	S3: "When I asked questions after the presentation, classmates just looked down."
	Classroom participation & passivity	Silence, lack of debate, passive classmates	3 (S2, S3, S5)	S4: "Some exchange students just want to have fun, not serious about study."
	Group work/teamwork issues	Uneven effort; cultural differences; exchange students unserious	3 (S3, S4, S5)	S4: "Teachers gave bonus points more easily to Japanese/Korean peers."
3. Financial Strain	Bias in recognition	Preference for students from developed countries	1 (S4)	S6: "Everything is expensive, insurance delay makes hospital costly."
	Scholarship insufficiency	Tuition covered but not living; still stressful	2 (S3, S6)	S3: "Without Mandarin, hard to get jobs except in Vietnamese restaurants."
	Need for part-time jobs	Mandarin-dependent jobs; restaurant work common	3 (S1, S3, S4)	S3: "I feel compelled to work so tuition won't burden my parents."
	Family financial pressure	Parents borrowing money; guilt to contribute	2 (S3, S2)	S5: "Public school fees are up to 90,000 NTD in average for each semester; very expensive."
4. Health & Well-being	Tuition differences (public vs. private)	Public universities per-credit more expensive	1 (S5)	S6: "Without insurance, I avoid going to clinic—it's too costly."
	NHI waiting period / insurance gap	6-month wait, reliance on private insurance	2 (S4, S6)	S6: "At first I felt really stressed... after 3 months I got used to it."
	Stress & mental health	Adjustment stress, workload anxiety	4 (S1, S3, S5, S6)	S3: "Two severe flus since arriving; sudden climate shifts."
	Physical illness	Frequent flu due to weather changes	2 (S3, S2)	S2: "The handbook listed banks, shops... really useful when I arrived."
	University support services	Counseling centers, handbooks, staff help	3 (S2, S3, S4)	

Machine Learning Results

Optimizing the number of LDA topics is essential for generating meaningful and coherent thematic structures (Deveaud et al., 2014; Veronica et al., 2023) (Deveaud et al., 2014; Veronica et al., 2023). To enrich the qualitative findings, LDA helps explore the interview corpus (499 sentences from six transcripts). After testing different model settings, the best solution identified 11 coherent topics. Each topic is described by its most frequent keywords and illustrated with representative quotes from documents strongly associated with that topic ($\theta \geq 0.30$). This approach allows us to see how recurring themes in the students' experiences align with, and sometimes extend, the qualitative analysis.

Model Selection and Grid Search

To ensure robustness, we conducted a grid search over multiple parameter settings: $K \in \{6, 8, 10, 11, 12, 14, 16, 18\}$, $\alpha \in \{\text{symmetric, asymmetric}\}$, and $\eta \in \{\text{symmetric, } 0.01\}$, with 20 passes and 2000 iterations. Each configuration was run with 10 random seeds and mean \pm SD values were reported for coherence (c_v) and log-perplexity. Results showed that $\eta=0.01$ consistently produced low coherence ($\sim 0.44\text{--}0.45$) despite low perplexity, indicating poor interpretability. The two best-performing configurations were:

- $K=11$, $\alpha=\text{symmetric}$, $\eta=\text{symmetric}$: $c_v=0.475\pm 0.012$; perplexity= -7.54 ± 0.014 .
- $K=10$, $\alpha=\text{asymmetric}$, $\eta=\text{symmetric}$: $c_v=0.474\pm 0.011$; perplexity= -7.50 ± 0.018 .

Since $K=11$ achieved the highest coherence and was supported by the coherence curve, it was selected as the final model.

Human Validation

To assess interpretability, two independent coders (the first author and a peer researcher) manually assigned topic labels to 33 exemplar documents (top three per topic with the highest θ values). Inter-coder reliability was very high, with an agreement rate of 90.3% and Cohen's $\kappa = 0.86$. In cases of disagreement during topic labeling, interpretations were discussed collaboratively and refined based on the semantic coherence of top keywords and representative excerpts until consensus was reached. This level of agreement indicates almost perfect reliability (Artstein & Poesio, 2008; Levin & Currie, 2014), confirming that the LDA-derived topics are both computationally robust and human-interpretable. Representative keywords and exemplar quotes are summarized in Table III.

Table III. LDA-Derived Topics with Keywords and Representative Quotes ($\theta \geq 0.30$)

Topic	Label	Top 10 Keywords	Representative Quote (θ , Doc ID)
1	Social integration & peer communication	people, help, everyone, vietnam, lot, communicate, taiwanese, different, group, master	“stayed in Taiwan for around 3 to 4 months... the biggest challenge was the language barrier.” ($\theta=0.837$, Doc 169)
2	Language barriers & self-improvement	get, solve, often, barrier, language, study, time, local, better, improve	“Looking ahead, I plan to adopt different strategies upon encountering challenges...” ($\theta=0.865$, Doc 20)
3	Classroom dynamics & intercultural interaction	student, class, taiwanese, taiwan, people, come, vietnamese, study, international, work	“Upon the conclusion of my presentation, I endeavored to stimulate discourse... but classmates disengaged.” ($\theta=0.911$, Doc 236)
4	Mandarin dependence & translation	chinese, use, mean, translate, important, overall, sometimes, google, not, seem	“Reassurance and expectations from society are sometimes difficult to translate into Chinese.” ($\theta=0.850$, Doc 111)
5	Financial stress	learning, country, money, challenge, effort, difference, taiwan, studying, financial	“Many peers need to allocate part of their earnings to support tuition and living expenses.” ($\theta=0.878$, Doc 99)
6	Program quality & workload	often, program, working, student, upper-class, available, explain, eat, instruction, certain	“I remain committed to taking a proactive approach to learning despite the heavy workload.” ($\theta=0.886$, Doc 96)
7	Health & academic pressure	time, health, learn, work, environment, information, take, subject, communication	“As a result, many students, particularly those in Chinese-medium programs, report stress and anxiety.” ($\theta=0.899$, Doc 45)
8	Dormitory & academic issues	living, academic, language, experience, challenge, dormitory, goal, enough, challenging	“MBA students sometimes find themselves overwhelmed by workload and dormitory life combined.” ($\theta=0.893$, Doc 77)
9	Friendship & social balance	however, taiwan, thing, friendship, really, space, university, avoid, balance	“The summary of language barriers and academic competition also shows impact on friendship.” ($\theta=0.940$, Doc 24)
10	EMI teaching quality	school, good, example, english, student, teacher, quite, not, difficult	“However, in classroom dynamics, I observed teachers struggling with EMI delivery.” ($\theta=0.888$, Doc 93)
11	Academic adjustment	student, school, make, come, challenge, taiwan, feel, country, academic	“Regarding administrative matters, my experience with the university’s international office has been excellent.” ($\theta=0.892$, Doc 90)

Table IV. Alignment between LDA Topics and Qualitative Themes

Qualitative Themes (Analytical Domains)	Corresponding LDA Topics (K=11)	Overlap and Reinforcement
Socio-cultural Adjustment	Topic 1: Social integration & peer communication; Topic 3: Classroom dynamics & intercultural interaction; Topic 9: Friendship & social balance	Both methods emphasize difficulties in building relationships, communication barriers, and cross-cultural tension.
Academic Challenges	Topic 4: Mandarin dependence & translation; Topic 6: Program quality & workload; Topic 10: EMI teaching quality; Topic 11: Academic adjustment	LDA expands the academic domain by exposing language-mix effects and course management issues.
Financial Difficulties	Topic 5: Financial stress; Topic 8: Dormitory & academic issues	Both analyses identify financial strain, cost-of-living gaps, and work-study conflicts.
Health and Well-being	Topic 2: Language barriers & self-improvement; Topic 7: Health & academic pressure	<u>This domain r</u> Reinforces stress, coping, and well-being challenges that correspond to <u>the</u> TASAM's Mobilization component.

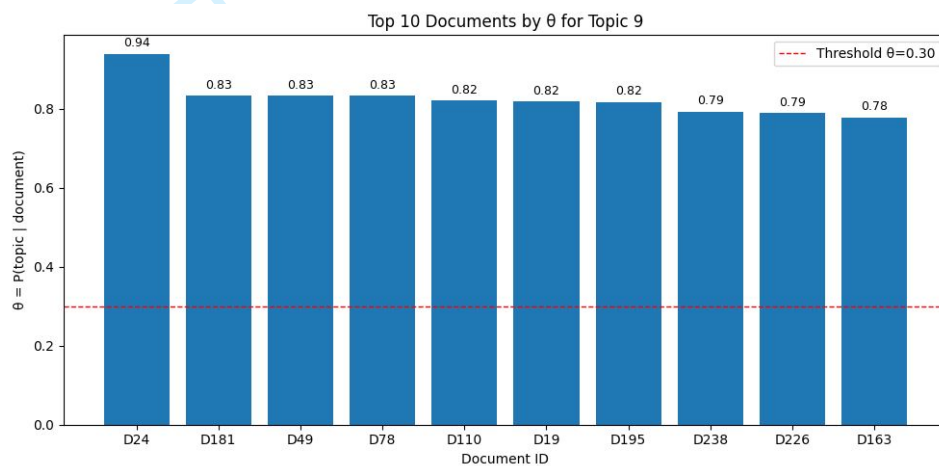
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Document Relevance Threshold

We define the document relevance score as $\theta = P(\text{topic} | \text{document})$, which indicates the probability that a given document belongs to a specific topic. In our data, the values of θ ranged from very low (≈ 0.01) to very high (up to 0.94). This means that some sentences were only weakly related to a topic, while others were almost entirely representative of one topic.

To separate meaningful cases from weak overlaps, we applied a threshold of $\theta \geq 0.30$. Under this rule, a document is considered significantly associated with a topic if at least 30% of its content is explained by that topic. For example, Document 24 in Figure 3 reached $\theta = 0.94$ for Topic 9 and was treated as significant, whereas another document with $\theta = 0.014$ was considered non-significant. This cutoff retained between 5.6% and 12.8% of documents per topic, providing a sufficient pool of representative quotes while avoiding noise from marginal associations. Sensitivity checks at 0.25 and 0.35 produced consistent distributions, confirming the robustness of this choice.

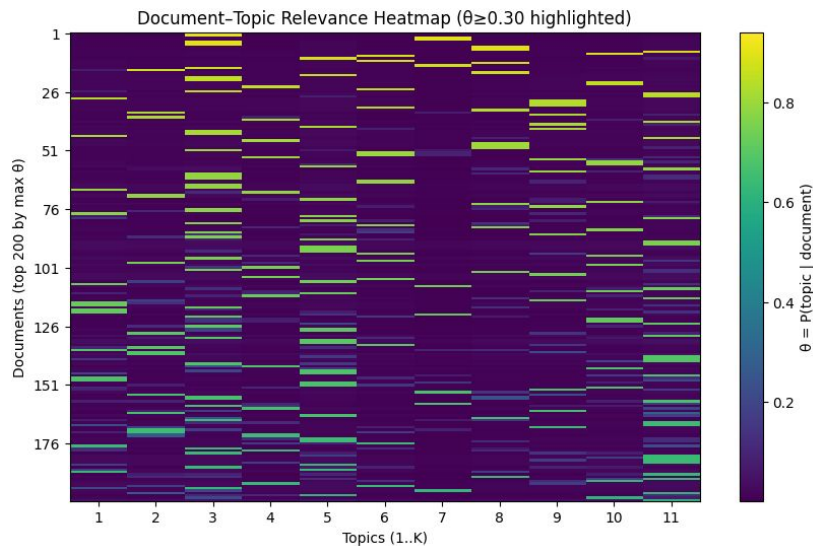
Figure 2. Top 10 documents by θ for Topic 9.



Each bar shows a document's posterior probability of belonging to Topic 9. Document 24 ($\theta=0.94$) is a clear exemplar, while all displayed documents exceed the significance threshold ($\theta \geq 0.30$).

Document–Topic Relevance Heatmap

Figure 3. Document–topic relevance heatmap ($\theta_{\{dk\}}$).



Each row represents a document (top 200 shown, sorted by maximum θ), and each column represents a topic ($K=11$). Color intensity indicates $\theta_{\{dk\}} = P(\text{topic } k | \text{document } d)$. Bright cells (yellow) denote strong associations ($\theta \geq 0.30$). The heatmap illustrates that most documents are strongly linked to one or two topics, supporting the interpretability of the extracted themes. Topics 3, 5, and 11 exhibit the highest coverage, while Topic 7 shows lower coverage, consistent with the distributional statistics reported in Table III. The Figure 3, together with Table III and Table IV, demonstrates that the identified topics are both statistically coherent and conceptually aligned with the manually coded themes.

5. DISCUSSION

The four analytical domains identified through both thematic and LDA analyses show how Vietnamese students' adaptation is shaped by linguistic, academic, financial, and health-related dynamics, collectively illustrate how Vietnamese students' adaptation is shaped by intertwined linguistic, academic, financial, and health-related dynamics.

Challenges Identified through Conventional Thematic Analysis

With respect to RQ1, these findings highlight the need for EMI programs that are responsive to linguistic and cultural diversity (Chu et al., 2018). In the present study, Chinese language proficiency emerged as a central factor influencing socio-cultural adjustment, as Vietnamese students frequently reported language barriers, difficulties in social integration, and experiences of stereotyping or misrecognition (Chou et al., 2012; Chu et al., 2018; Wang & Shen, 2024).

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Language-related challenges often limited students' ability to build friendships, engage confidently in classroom activities, and feel socially included (Park et al., 2017).

Many participants also reported hesitancy in expressing concerns or seeking institutional support, which may lead to misunderstandings and feelings of isolation, with implications for well-being (Nguyen, 2024; Park et al., 2017). Walkinshaw et al. (2017) emphasize the value of pre-enrollment cultural orientation programs and ongoing language support; however, the present findings suggest that institutional policies and EMI implementation strategies remain uneven, indicating a need for clearer support frameworks, bilingual teaching practices, and sustained faculty development (Lai & Idris, 2025).

Addressing RQ2, despite the vision of the Taiwan's BN2030 Bilingual 2030 Policy to enhance English proficiency and international competitiveness, findings suggest that its implementation often overlooks the practical needs of international students. While EMI is promoted in principle, many universities still rely heavily on Mandarin in lectures and communications, limiting accessibility and engagement for non-Mandarin speakers. This misalignment between policy intent and classroom practice reflects structural challenges in institutional implementation in how the Bilingual 2030 Policy is enacted at the institutional level (Huang, 2024; Yeh, 2023).

Beyond academics, students must adapt to unfamiliar living environments and cross-cultural cohabitation, where university administration plays a crucial support role (Nguyen, 2024). Stereotypes linking Vietnamese students to migrant labor further complicate adjustment and erode their sense of belonging—. Taiwanese social norms characterized by formality and compartmentalization contrast with Vietnam's more communal culture, making informal friendships difficult to establish. Traditional pedagogical norms emphasizing authority and limited interaction may constrain participation, leading to more passive learning tendencies (Chu et al., 2018; Wong & Hyde, 2024). (Chu et al., 2018; Stevenson, 2014; Wong & Hyde, 2024).

Many graduate students still struggle with reading and writing academic work in English (Nguyen et al., 2019; Wen et al., 2025) (Wen et al., 2025). University instructors often overlook language correction, and only a few graduate courses offer formal training to improve research writing skills carefully, or they are simply unconcerned (Nguyen et al., 2019). To cope, these students rely on self-improvement enhancing critical thinking, adhering strictly to academic norms, and managing their time efficiently (Singh & Jack, 2022; Wen et al., 2025) (Lin & Sung, 2020; Sano et al., 2023; Singh & Jack, 2022; Wen et al., 2025). These findings reaffirm that linguistic and pedagogical barriers remain central challenges to student adjustment and academic accomplishment in EMI programs. Many graduate students continue to struggle with academic reading and writing in English, a challenge compounded by limited instructional attention to language development and the scarcity of formal research writing training at the graduate level (Nguyen, 2024; Wen et al., 2025) (Nguyen, 2019; Wen et al., 2025). To cope, students often rely on self-directed strategies such as enhancing critical thinking, adhering to academic conventions, and managing time efficiently (Singh & Jack, 2022; Wen et al., 2025). These patterns reaffirm that linguistic and pedagogical barriers remain central to student adjustment and academic accomplishment in EMI programs.

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Concerning RQ3, financial constraints further intersect with linguistic and academic challenges, shaping students' overall adaptation experiences. Prior studies emphasize the importance of expanded, means-tested scholarships to support international students from lower-middle-income backgrounds (Nguyen, 2024; Sheu et al., 2022). In the present study, however, tuition-focused financial support appeared insufficient to address broader living and employment pressures faced by Vietnamese graduate students. Despite receiving tuition assistance, many participants encountered difficulties accessing part-time employment due to limited Mandarin proficiency, constraining their ability to supplement living expenses. ~~This paradox points to a policy tension within Taiwan's Bilingual 2030 framework in which, where English-medium education-EMI is promoted academically, while socioeconomic participation remains largely Mandarin-dependent. As a result, financial, suggesting that financial support alone may be insufficient to ensure sustainable student adaptation.~~

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As regards RQ4, financial and health-related challenges further highlight the limits of policy-level bilingualization when institutional support remains uneven (Newton et al., 2021; Nguyen, 2021). ~~Beyond financial pressures, these health-related challenges show how accumulated stress can undermine students' well-being when institutional safety nets are delayed or fragmented. Beyond financial pressures, these health-related challenges show how accumulated stress can undermine students' well-being when institutional safety nets are delayed or fragmented.~~ The findings suggest that tuition-focused financial assistance alone does not adequately address living, employment, and well-being pressures faced by Vietnamese graduate students. ~~Despite tuition support, many participants faced barriers to part-time employment due to Mandarin dominance. These challenges, combined with academic stress and delayed access to National Health Insurance (NHI), led to uneven adaptation outcomes. Despite receiving tuition support, many participants encountered barriers to part-time employment due to the dominance of Mandarin, alongside heightened academic stress and delays in accessing National Health Insurance (NHI).~~ This pattern points to a structural misalignment ~~at the policy level within Taiwan's Bilingual 2030 Policy, where English-medium instruction-EMI is promoted academically while socioeconomic and well-being support remains largely Mandarin-dependent, shaping uneven adaptation outcomes.~~

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The Supplement from LDA Result

Academic-Cultural Nexus Reinforcement

LDA themes 1–4 and 6 directly corroborate conventional findings about academic stress (Newton et al., 2021) and cultural adaptation (Chu et al., 2018), while adding granularity. Where thematic analysis identified broad “language barriers,” LDA reveals more nuanced sub-challenges such as workload management, educational system navigation, and healthcare access. Theme 5's focus on language learning interactions provides additional insight into how linguistic struggles extend beyond the classroom.

Systemic Barrier Elaboration

Themes 7–10 uncover structural issues that were only partially captured in manual coding. Theme 8's job-market challenges substantiate Sheu et al. (2022)'s financial concerns ~~by evidencing work-study balance struggles showing concrete evidence of work-study balance struggles.~~ Theme

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10's focus on financial management nuances scholarship debates by highlighting cost-of-living pressures. ~~Meanwhile,~~ Theme 9's limited community support illustrates how intra-diaspora networks shape adaptation, complementing Wong and Hyde (2024)'s findings on discrimination.

Hidden Pattern Revelation

LDA also identified underexplored aspects such as technology adaptation and intra-community relations. ~~These findings suggest dual integration pressures, as students navigate assimilation into that ex dual integration pressures: assimilating into~~ Taiwanese society ~~while negotiating~~ expectations within their own cultural groups.

Advantages of LDA in Complementing Conventional Analysis

This dual-method approach demonstrated LDA's capacity to process large textual datasets (~~Wheeler et al., 2024~~) and uncover broader thematic patterns (Veronica et al., 2023; Wheeler et al., 2024). While manual coding yielded four major themes, LDA produced eleven coherent topics, providing quantitative validation for qualitative insights (8/11 theme alignment). ~~The identification of previously overlooked issues, such as technology adaptation and stress-health linkages, enriched interpretation. Together, computational and qualitative analyses strengthened evidence-based implications for EMI governance and international student support in Taiwan. The algorithm identified previously overlooked issues such as technology adaptation and stress-health linkages, thereby enriching interpretation. Consistent with (Tekin, 2024), computational analysis revealed theme prevalence, while qualitative analysis clarified contextual meaning. Together, these methods strengthened evidence-based implications for EMI governance and international student support in Taiwan.~~

6. IMPLICATIONS

This study offers practical implications for improving EMI governance in Taiwan. Guided by the TASAM framework, the implications are organized by level of implementation, distinguishing between institutional practices and national policy considerations.

6.1 Institutional-Level Implications

At the institutional level, universities play a central role in shaping international students' everyday academic and social experiences within EMI contexts (Tamtam et al., 2012; Walkinshaw et al., 2017; Wang & Shen, 2024; Wong & Hyde, 2024).

- ~~Under Socio-cultural Adjustment (Trust & Attraction), universities can strengthen social confidence and engagement through structured peer-mentorship and intercultural activities.~~
- ~~Under Academic Challenges (Structure & Accomplishment), institutions should ensure bilingual administrative communication, conduct EMI teaching audits, and provide discipline-specific EAP and academic writing support.~~
- ~~Under Financial Difficulties, universities may expand assistantships and develop appropriate part-time job channels aligned with students' academic schedules.~~

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APA style.

• *Under Health and Well-being (Mobilization)*, early-arrival health briefings can help address the NHI waiting period and promote timely access to healthcare.

• *Under Trust & Attraction*, universities can strengthen social confidence and engagement by establishing structured peer-mentorship programs, intercultural activities, and community-building initiatives that promote interaction between local and Southeast Asian students. Such measures may help counter stereotypes and enhance a sense of belonging.

• *Under Structure*, institutions should ensure bilingual communication across administrative emails, official websites, and learning management systems, supported by periodic EMI teaching audits to enhance transparency and accessibility.

• *Under Accomplishment*, discipline-specific English for Academic Purposes (EAP) workshops and academic writing support can assist students in managing heavy coursework and addressing linguistic challenges.

• *Under Mobilization*, universities may introduce early-arrival health briefings to address the National Health Insurance (NHI) waiting period and provide more assistantships for schoolwork or provide appropriate part-time job channels for them.

These institutional-level measures directly respond to the socio-cultural, academic, financial, and health-related challenges identified through both thematic and LDA analyses, reinforcing the TASAM's emphasis on institutional responsiveness to student adaptation.

6.2 National Policy-Level Implications

At the national level, existing research underscores the importance of aligning EMI initiatives with broader language, employment, and student welfare policies to support sustainable internationalization (Huang, 2024; Nguyen et al., 2020; Phyak, 2024).

The findings suggest that closer coordination between *Taiwan's Bilingual 2030 Policy* and complementary support systems is needed to address structural tensions identified in this study. In particular, aligning EMI promotion with expanded Mandarin learning opportunities, inclusive student employment frameworks, and more consistent health-access arrangements may help reduce disparities between policy intentions and students' lived experiences. Such policy-level adjustments could support more equitable and sustainable implementation of *Bilingual 2030* beyond the classroom.

7. LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. The small sample size and snowball recruitment limit the generalizability of the findings, reflecting the exploratory nature of the research rather than a representative design. While the LDA model provided complementary insights, its application to a relatively small corpus may have constrained topic granularity despite validation procedures. Reflexively, the first author's positionality as a Vietnamese doctoral student in Taiwan facilitated rapport but required attentiveness to potential interpretive bias. Interviews were conducted in Vietnamese and translated into English, with bilingual checks to preserve meaning. Due to

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confidentiality considerations, the data cannot be publicly shared but may be made available upon reasonable request.

~~Future research could extend this study by incorporating larger and more diverse samples across different institutional contexts to enhance generalizability. Longitudinal and comparative designs may further clarify how mobilization practices and health-related outcomes evolve across different EMI systems in East Asia.~~

~~Future research could extend this study by incorporating larger and more diverse samples across different institutional contexts to enhance generalizability with more updated text analysis tools. Longitudinal designs and comparative studies across EMI systems in other East Asian contexts would also help clarify how adaptation patterns evolve over time.~~

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8. CONCLUSION

In conclusion, this analysis explored the experiences of Vietnamese students in ~~Taiwan's English-Medium Instruction (EMI)~~ programs, using a mixed-method approach with ~~the~~ TASAM framework ~~which. The TASAM framework~~ provided a robust and coherent lens that enabled students to articulate their adaptation experiences. Conventional thematic analysis of interview data revealed four primary themes: socio-cultural adjustments, academic challenges, financial difficulties, and health and well-being challenges. Eleven sub-themes detailed the multifaceted challenges these students face in a foreign academic environment, including language barriers, social integration difficulties, financial strain, and healthcare access (Chu et al., 2018; Newton et al., 2021; Sheu et al., 2022).

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The application of ~~Latent Dirichlet Allocation (LDA)~~ provided a complementary perspective, consolidating and reinforcing the validity of the primary themes and their interconnectedness through interview data (Hussein, 2009; Veronica et al., 2023) ~~;(Tekin, 2024; Veronica et al., 2023)~~ ~~(Tekin, 2024; Veronica et al., 2023)~~. LDA helped confirm the critical challenges faced by Vietnamese students, thereby enhancing the reliability and trustworthiness of the qualitative findings (Ajinaja et al., 2023; Park et al., 2019). This iterative process validated the research outcomes while highlighting the importance of method triangulation in capturing comprehensive results (Hussein, 2009).

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Vietnamese students represent an important human resource for Taiwan's higher education system. This research offers several important contributions to Taiwan's educational policies and governance in relation to EMI. Beyond the overarching ~~the~~ BN2030, which sets a broad vision for enhancing English proficiency (Chang, 2025; Yeh, 2023), the findings can inform more granular policies and institutional practices that directly affect international students showing that this is a lesson for others to help enhance the right internationalization in education. The goal of internationalization should be to simplify institutional systems for international students, not to create additional challenges (Gyamera & Asare, 2023). Within this study, insights can help universities refine student support programs, design culturally responsive curricula, and allocate resources more effectively to address the specific needs of Vietnamese students. For example, universities can leverage these findings to develop targeted language support programs, and technological updates, enhance financial aid opportunities, and create inclusive social environments that enhance greater integration and belonging (Lin et al., 2024). Universities should

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also review and update admissions policies to ensure that Vietnamese students are adequately prepared for EMI-related challenges. Furthermore, these findings can inform the development of training programs for faculty and staff to enhance their cultural competence and ability to support international students effectively (Bolton et al., 2023; Lai & Idris, 2025; Nguyen, 2024).

Ultimately, this study contributes to a more equitable and effective educational experience for not only Vietnamese but all students, reinforcing Taiwan's position as a global leader in international education and promoting a globalized and interconnected academic community.

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Response to Reviewers - Revision 3

Reviewer 1 comment	Author response	Location of revision
There are some local words.	Thank you for pointing this out. We have reviewed the manuscript carefully and revised or removed localized expressions to ensure the language is clear and accessible to an international readership. Moreover, we unified local terms to one common term throughout the study.	Revised throughout the manuscript
Add more sources of reference. Please add more and correct current citations in APA style only.	Additional international and peer-reviewed sources have been incorporated into the Introduction, Literature Review and Discussion sections to strengthen engagement with relevant scholarship.	Revised throughout the manuscript
The references are provided in the native language.	All newly added references follow APA style, and non-English sources have been retained only where they are directly relevant and properly contextualized. Also, the native studies are corrected in APA rule.	Section 1 (p. 2) Section 2.2 (pp. 3-4) Section 3 (p. 5) Section 8 (pp. 19-20)
Please rearrange the research questions accordingly.	We have reviewed and clarified the ordering of the research questions to ensure they align sequentially with the four analytical domains and the structure of the analysis harmonizing with five analytic dimensions of TASAM. Minor wording adjustments were made to improve clarity and coherence.	Section 2.1 (pp. 2-3) Section 3 (p. 5) Section 6.1 (p. 18)
Consider the limitations of current research to open up avenues for future research.	The Limitations and Future Research section has been refined to more clearly acknowledge the scope and constraints of the study and to outline directions for future research, including	Section 7 (p. 19)

Reviewer 1 comment	Author response	Location of revision
	longitudinal and comparative approaches.	
If the research article is funded by university/institute, please provide number with other detail.	A funding statement has been added to clarify that this research received no external funding.	Section 3 (p. 6)
There is human participation within paper. Please provide the ethical approval information.	We have added a clear ethical statement specifying informed consent procedures, voluntary participation, confidentiality protections, and supervisory ethical oversight in accordance with institutional guidelines at National Chengchi University (NCCU), Taiwan.	Section 3 (p. 6)
Improve grammar and proofread typos.	The manuscript has been carefully proofread to improve grammar, sentence structure, and overall readability, with particular attention to clarity and consistency in the Discussion and Conclusion sections.	Revised throughout the manuscript
Reviewer 2 comment	Author response	Location of revision
The clarity and readability of the manuscript have improved considerably. Only minor editorial refinements are recommended, particularly simplifying a small number of overly long or complex sentences in the Discussion section.	We thank the reviewer for the positive evaluation. Following this suggestion, we have further streamlined several sentences in the Discussion section to enhance conciseness and improve overall flow, while preserving the original meaning and analytical focus.	Section 5 (pp. 15-17)
Ensuring consistent usage of key policy-related terms across sections would further strengthen clarity.	We have carefully reviewed the manuscript to ensure consistent use of key policy-related terms (e.g., Bilingual 2030 Policy / BN2030) across all sections. Minor wording adjustments were made to improve terminological consistency.	Throughout the manuscript
These are minor issues that can be addressed easily during final revision.	The suggested minor editorial refinements have been fully addressed. No substantive changes were made to the theoretical framework, methodology, or findings.	minor revisions throughout