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結案報告

研究計畫名稱：Constructing an English medium instruction (EMI) logistics management course curriculum for enhancing military personnel's and cadets' logistics skills
建構強化國軍後勤技能之後勤管理雙語課程

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TABLE OF CONTENTS 目次

中文摘要

因應雙語國家政策及國軍後勤物流及供應鏈新型態運作模式及實務，本研究透過文獻探討及專家訪談法，以了解並制定後勤管理技能及其專業知識領域的雙語教育課程設計架構。本研究依據後勤管理教育知識與技能、與雙語教育(EMI)課程建構影響因素與方式等文獻探討，透過專家深度訪談方法，瞭解制定後勤管理雙語教育課程的架構與設計細節。研究結果顯示後勤管理雙語教育(EMI)課程須依據教育目標與學習目的而訂，課程建構尚須考量課程設計與教學目標、學生屬性、及教師屬性等特性。依據文獻及專家訪談結果，本研究建議四大後勤管理知識領域及其四大次領域知識如下: (1) 物流與商品、物流演進與未來趨勢；(2) 採購與供應、軍事或國際物品採購；(3)倉儲與存貨、科技與倉儲設備；(4)運輸與配送、國際貿易概論。最後，本研究結果顯示，建構後勤管理雙語教育課程時，教育現場所需的教材資源、教學資源、與評量與教學方法也是成功設計並導入後勤管理雙語教育課程重要的關鍵因素。本研究提供學術貢獻，其研究結果增加學術界瞭解軍事導向有關實務、管理層級後勤管理技能與專業知識。同時，後勤管理雙語教育課程架構與設計結果提供教學實務貢獻，以利後續設計並持續改進雙語課程增進學生學習成效。

關鍵字: 後勤管理課程、雙語教育、課程設計、後勤管理知識與技能、教學

ABSTRACT

This study aims to review the relevant studies and conduct in-depth interviews to obtain the results for logistics-relevant EMI curriculum design, providing the potential answers to respond to the Bilingual 2030 policy in Taiwan, MND English language enhanced practices and programs, and new skill requirements for new war. The results from the literature review and in-depth interview are summarized as follows. First, given students' English and specialized knowledge level, the logistics/SCM skill requirements for officer and sergeant logisticians are suggested to focus on the logistics dimension, which can be represented by operational and managerial level viewpoints. Second, the results concerning curriculum design relate to the course objective, the students' characteristics, and the instructors' characteristics. The third category of the findings concerns teaching content and skills as follows: (1) logistics and products and logistics revolutions and the issues for new modern logistics/SCM; (2) purchasing and supply and procurement for military or international facilities, materials, and resources; (3)warehousing and inventory and information and communication technology and warehousing facilities and tools; and (4) transportation and distribution and Introduction to international trade. Finally, this study notes that factors such as teaching materials, financial, educational, and administrative resources, as well as assessment and teaching methods, play an essential role in effective EMI teaching and learning. Overall, this study contributes to military and educational benefits. The results allow logistics practitioners in the armed forces to re-examine their critical skills and knowledge and to consider operational- and managerial-level logistics requirements in response to the increasingly globalized and digital logistics/SCM operations environment. Furthermore, this study's results help educators and learners by providing detailed suggestions and guidance on preparing, conducting, evaluating, and re-designing the curriculum to achieve the effectiveness of an EMI logistics management course.

Keywords: Logistics management course, English medium instruction (EMI), curriculum design, logistics content knowledge and skills, teaching

1、INTRODUCTION　第一章 緒論

1.1. Research background and questions　　第一節 研究背景與研究問題

To respond to the Bilingual 2030 policy launched by the government in Taiwan, the Ministry of National Defense (thereafter, MND) has also launched various regulations and budgets to promote bilingual programs and to encourage military personnel and cadets to strengthen their English communication skills (National Development Council, 2024; ROC National Defense Report, 2023). The ROC National Defense Report (2023) suggests the two central policies. The first policy encourages military personnel to advance their foreign language skills and take language proficiency exams. MND has been giving subsidies, administrative merits, and extra points for potential promotions to those who have finished learning programs and gotten qualified certificates. Second, MND has an advanced English learning environment for cadets regarding learning materials, teachers, and classrooms. MND expects to enhance military learners' English language skills. Consequently, research into constructing English medium instruction (thereafter, EMI) courses and curricula is urgent and vital in military higher education institutions.

Given that Taiwan is an international country, developing people's English language competence, particularly for Taiwan's young generation who are planning to be employed in the shipping industry, is significantly essential (Tseng et al., 2018). English communication skills are most commonly acquired in the global market, trade, and business. Furthermore, from a logistics perspective, issues such as globalization, new technologies, and supply chain management (thereafter, SCM) challenge logisticians and managers (Wu, 2006) and educators and students (van Hoek et al., 2002). Similarly, military logisticians must improve their English skills to further understand procurement and supply affairs concerning new advanced war equipment and materials shipped from foreign suppliers and manufacturers. Accordingly, integrating EMI curriculum consideration into logistics-relevant courses is essential, suggesting the potential benefits for enhancing students' competitiveness, effectiveness, and English language proficiency.

The two research questions suggested below are based on a discussion of how to achieve the current demands for new logistics/SCM skills, EMI practices, and course design in military education institutions.

1. *What the new essential logistics skills required by officers and sergeants in the current military logistics and SCM fields are, and*
2. *What English medium instruction (EMI) logistics management course curricula included new essential logistics skills enhanced course content and learning resources?*

1.2 Research objectives 第二節 研究目的

Based on the abovementioned discussion, this study has two research objectives. First, this research aims to review the relevant studies concerning logistics/SCM and EMI practice and education fields to develop a tentative framework for fostering logistics cadets' content knowledge and skills for the modern-, digital-, and global-oriented logistics market. The results here provide a theoretical foundation for exploring the answers to the first research question. The second objective is integrating the theoretical bilingual concept into the new logistics management curriculum. The findings offer the potential answers to the second research question listed in the first sub-section.

Overall, the findings generated from this study have the potential advantages for equipping military personnel and cadets with well-trained logistics skills and comprehensive English abilities. The research contributions will benefit the fulfillment of the objectives of the military tasks concerning international material and weapons purchasing and supply. Also, this study provides practice contributions to respond to the Bilingual 2030 policy launched by the government in Taiwan and MND English language-enhanced practices and programs.

2. The relevant literature review 第二章 文獻探討

2.1 Logistics management education and skills 第一節 後勤管理教育與技能

As mentioned in the Introduction section, the scholars (Wu, 2006; van Hoek et al., 2002) suggest that the issues of globalization and the digital technology revolution have challenged the practice field (i.e., logisticians and managers) and the education field (i.e., educators and students). As a result, issues such as new skill requirement development, advanced logistics curriculum, and effective teaching methods are significantly addressed. From the educational and military perspectives, the considerations in logistics management education, such as skills and competencies, curriculum, pedagogy, and teaching materials, are vital and are comprehensively explored and identified in military higher education institutions.

The literature suggests some skill recommendations for university teachers. For example, Wu (2006) analyzed the secondary database, like the logistics license, and found out the differences and level categories in the logistics education area: the basic skill category, the managerial category, and the business category. Similarly, the findings generated by Wu (2006) are consistent with the argument suggested by Murphy & Poist (1991). Murphy & Poist (1991) acknowledged that logisticians' skills can be categorized into three areas: business, logistics, and management. This category framework, or BLM framework, is commonly used to illustrate practitioners' skills in the logistics/SCM fields. Table 1 summarizes the key points of these two major studies.

Table 1 Key points of the relevant research on skills

Murphy & Poist (1991)	Wu (2006)
Business skills:	*Basic skills:*
・ Business functions knowledge	・ Networking/computing
・ Business diverse subjects such as economics, psychology, and sociology	・ Labor/customs/tax laws ・ Logistics center operation skills
Logistics skills:	*Managerial skills:*
・ International logistics-related knowledge	・ International trading/procurement
・ Regulation-related knowledge	・ Labor/customs/tax laws
・ logistics executives-relevant knowledge needs to own	・ Quantitative analysis ・ Planning/Evaluation
Managerial skills:	*Business skills:*
・ Knowledge of planning attributes	・ International trading/procurement
・ Knowledge of organizing attributes	・ Finance/cost control
・ Knowledge of personal attributes	・ Quantitative analysis ・ Planning/Evaluation

Source: This research report

Moreover, the literature suggests that some domain knowledge fields should be considered seriously. Some are noted for the multidimensional nature of the qualitative/quantitative skills (Tyndall et al., 1998), both traditional and new business aspects (Burcher et al., 2005), a new logistics/SCM managerial capability perspective (Murphy & Poist, 2006), and practitioner managers' viewpoints (Gravier & Farris, 2008). Table 2 summarizes the essential key points of the abovementioned studies.

Table 2 Key points of the research on domain knowledge fields and their skills

Authors	Key points
Tyndall et al. (1998)	・ Qualitative/quantitative skills ・ Multi-functional capabilities to comprehend all aspects of the supply chain, as well as the supply chain's business, market, and competitive impacts ・ Interdisciplinary skills, particularly in the functional implications of information systems and technology ・ Cross-geography-, multi-cultural-, and multi-national-oriented skills ・ Interpersonal skills like (1) being able to motivate and manage a wide variety of people－employees and external suppliers, partners, and providers and (2) being able to recruit, build teams, and motivate cross-geography, and cross-discipline teams. ・ Capabilities to be knowledgeable in practices and results across

		industries
	・	Skills to be able to conceptualize solutions and implement them
	・	Capabilities to focus on margins, revenue enhancement, working and fixed capital, and the total cost and business implications of all decisions across the enterprise
Burcher et al. (2005)	・	Traditional areas: strategic logistics planning, transport management, material planning, warehouse operations, purchasing and supply, demand forecasting, and systems design.
	・	Newness areas: business-to-business e-commerce, supplier quality, production planning, and personnel/human resource management.
Murphy and Poist (2006)	・	Five highest-ranked logistics skills: customer service, inventory management, transportation and traffic management, logistics information management, and warehousing management for the senior- and entry-level logistics managers.
Gravier and Farris (2008)	・	Specialty skills
	・	General business
	・	Interpersonal relations and communications
	・	Computer systems

Source: This research report

2.2 English medium instruction-related studies 第二節 雙語教育文獻探討

English medium instruction (EMI) policy has increasingly gained attention in Asia-Pacific countries in response to the various considerations in the social, historical, political, economic, and ideological fields (Walkinshaw et al., 2017) and to support the educational objectives of academic specialized knowledge and English language learning (Chuang, 2015; Lee et al., 2021; Schmidt-Unterberger, 2018; Nguyen et al., 2017). Although EMI is still ill-defined and not fully agreed upon, EMI is viewed as teaching subjects or particularly courses/programs using the English language without explicit language learning aims and being commonly adopted in a country where English is not spoken by a majority of the people (Schmidt-Unterberger, 2018; Walkinshaw et al., 2017). Therefore, based on the definition above, EMI does not include explicit language learning objectives; rather, EMI practice could be a component of a specialized knowledge course that aims to allow students to learn content through English-based instructions. (Schmidt-Unterberger, 2018).

However, EMI challenges higher education institutions' teachers, students, and managers, particularly in countries where most people do not speak English. The literature addresses these issues from teacher, student, and university perspectives. For example, Walkinshaw et al. (2017) note that teacher’s teaching delivery and teaching content challenge EMI practice. Tseng et al. (2018) found that teachers' characteristics (e.g., teacher's English level, teacher's shipping

knowledge, and teacher's experience with EMI teaching) and syllabus design (e.g., course material, learning strategies, learning assessment). Alfaro-Tanco et al. (2020) use the questionnaire method to collect EMI lecturers' viewpoints and provide the findings concerning teaching challenges such as level of confidence, EMI lecturers' methodology, teaching style, preparation time, language, and interaction with students.

Concerning students' perspectives, Walkinshaw et al. (2017) stress the role of learners' sufficient academic language ability in influencing EMI implementation. Tseng et al. (2018) also suggest that the following factors should be considered: students' English level, students' shipping knowledge, and students' learning habits. Lee et al. (2021) empirical research on a Korean university concludes that students' most significant challenge and difficulty is their low English ability.

From a university perspective, the literature highlights (1) limited training, resources, and funding support for staff at the institutional and classroom levels (Walkinshaw et al., 2017), (2) the learning resources, including electronic teaching platform, classroom facilities, availability of assistance, and a wide variety of relevant courses (Tseng et al., 2020), and (3) educational support provided by the university such as support for correcting, teaching, editing, financial support, fewer bureaucratic aspects, and too many students (Alfaro-Tanco et al., 2020).

Given the growing need for globalization and language ability, integrating EMI practice into higher education institutions is essential and urgent, specifically for the Asia-Pacific country's abilities (Lee et al., 2021; Tseng et al., 2018; Tseng et al., 2020). Consequently, the issues do not relate to challenges and difficulties in implementing EMI policy; instead, they focus on the strategies that can help teachers and learners overcome the drawbacks while improving the effectiveness of EMI lectures and programs.

3. Methodology 第三章 研究方法

3.1 Interview method　第一節 訪談研究方法

This study conducted the interview method, and the details of the research procedures are illustrated below. First, this study reviewed the relevant studies on logistics education and skills and English medium instruction (EMI) practices and programs. This provided theoretical foundations for research implementation and interview protocol development. Second, based on the previous relevant literature review, this study developed the interview guide and questions for the interview participants.

The interview questions were discussed with this study's co-researcher to ensure the following requirements: (1) the research procedure is appropriate and feasible, (2) the interview questions are relevant to this study's research objectives, and (3) the collected data can provide

the qualified and significant answers to the research questions. Last, this study conducted an interview process and collected research data according to the case study method suggested by Yin (2003).

According to the relevant literature concerning logistics/SCM management, this study considers the four specialized knowledge areas: (1) Logistics and products, (2) Purchasing and supply, (3) Warehousing and inventory, and (4) Transportation and distribution. Furthermore, this study follows Gravier and Farris's (2008) suggestion of curriculum design and integrates the three areas into the interview protocol. They are curriculum design, content and skills, and teaching methods and resources.

3.2 Interview participants　第二節 訪談對象及時程

This study used the semi-structural interview protocol that allows the researchers to gather data based on the research aim and scope. Additionally, this interview technique helps the researchers collect data from the interviewees' viewpoints who are willing to provide more relevant and essential information based on archival records and experiences (Ragab & Arisha, 2017). Therefore, this research uses these sources to ensure that information was gathered from a wider perspective and multiple sources that are expected to increase validity and reliability (Eisenhardt, 1989; Yin, 2003). The interview participants and interview details are illustrated in Table 3.

Table 3 Details of interview participants

Areas	Questions	Participants	Dates
Logistics SCM Shipping	Integrate the considerations of curriculum design, teaching content and skills, and teaching methods and resources into the following logistics/SCM EMI course: ・ Logistics and products ・ Purchasing and supply ・ Warehousing and inventory ・ Transportation and distribution.	國立臺灣海洋大學 航運管理學系 林O誠教授	・ 10.18 ・ 10.24 ・ 11.1
EMI	・ Specialized knowledge areas ・ EMI curriculum design elements ・ Analysis and discussion on interview collected data	銘傳大學國際學院 趙O如教授	・ 9.26, 9.27 ・ 10.3, 10.4, 10.7, 10.14, 10.17, 10.21, 10.24, 10.28

Source: This research report

4. Results and discussion　第四章 研究結果與討論

4.1 Results concerning curriculum design　第一節 課程設計研究結果

Curriculum design in the field of logistics/SCM EMI education is related to developing a logistics curriculum to meet industry or globalization needs and foster students' logistics skills. Furthermore, EMI-focused curriculum design is expected to allow students to learn specialized content knowledge through English-based instructions. This study synthesizes and summarizes the interview data below and emphasizes that the EMI course curriculum design aims to help learners achieve their learning goals and foster their skills. The findings below consist of the significant suggestions of the studies (e.g., Walkinshaw et al., 2017; Tseng et al., 2018; Alfaro-Tanco et al., 2020). However, given the English language challenge and domain knowledge learning, the interview experts stress that teachers should pay more attention to a balanced state of English instructions and specialized knowledge content.

- *Educational-relevant issues* (課程與教學)*:* educational objectives, core capabilities, required certificate and license exams, and learners' career plans. These abovementioned issues significantly impact the elements of curriculum design, including learning objectives, core capabilities, knowledge content, teaching methods, schedules, and assessment.
- *Students' characteristics* (學生屬性)*:* Students' characteristics influence the design of logistics/SCM EMI courses. The following factors should be significantly considered: students' English language level, students' perception of EMI courses, students' needs for choosing EMI courses, students' logistics/SCM knowledge, and students' learning habits and approaches.
- *Teachers' characteristics* (教師屬性)*:* Another character in the EMI classroom is an instructor; thus, the EMI curriculum design should pay attention to teachers and their views. The interview data emphasizes the vital elements below: teachers' English language level, EMI course planning and implementation, teachers' EMI teaching experiences and preparation time, educational objective of the EMI course, classroom management, and interaction with students.

4.2 Results concerning teaching content and skills　第二節　課程內容與技能研究結果

As mentioned earlier, this study reviewed the studies and suggested the four primary content knowledge, including (1) Logistics and products, (2) Purchasing and supply, (3) Warehousing and inventory, and (4) Transportation and distribution. Moreover, the content and skills involved in modern logistics/SCM education are expected to provide value-added course

content for educational improvements and young logisticians (Gravier & Farris, 2008). Therefore, the interview experts suggest sub-subjects for the main content subjects above. Specifically, considering teachers' and students' English level and teaching and learning loading, the experts also suggest that the content knowledge of sub-categories can focus on teaching terminologies and briefly Introduce the sub-subjects.

- *Logistics and products* (物流與商品): Logistics revolutions and the issues for new modern logistics/SCM (物流演進與未來趨勢).
- *Purchasing and supply* (採購與供應): Procurement for military or international facilities, materials, and resources (軍事或國際物品採購).
- *Warehousing and inventory* (倉儲與存貨): Information and communication technology and warehousing facilities and tools (科技與倉儲設備).
- *Transportation and distribution* (運輸與配送): Introduction to international trade (國際貿易概論)

4.3 Results concerning teaching methods and resource　第三節 教學策略與資源研究結果

The literature acknowledges that the relationship between effective teaching methods and performance in logistics/SCM education exists (Gravier & Farris, 2008). Consequently, further academic efforts into the connection between teaching methods and learning performance are necessary and essential. The interview experts suggest that teaching methods and resources depend on the content knowledge of subjects and sub-subjects. Also, the teaching materials and resources play a predominant role in the success of EMI course implementation. The interview information and literature review results are integrated and summarized below (Walkinshaw et al., 2017; Tseng et al., 2020; Alfaro-Tanco et al., 2020). The categories of the results are teaching materials, educational resources, and assessment and teaching methods.

- *Teaching materials* (教材資源). English-edition logistics/SCM textbooks are pretty expensive. Thus, the experts recommend that university administrators ask Taiwanese publishers to consider International-edition textbook contracts with foreign publishers to obtain cheaper textbooks as teaching resources. In addition to English-edition learning materials, the experts suggest providing Chinese-edition handouts or prerequisite lectures to enhance students' specialized knowledge level.
- *Resources* (教學資源). Administrators should provide support regarding funding, staff training, teaching/classroom facilities, availability of assistance from language and content experts, and electronic or paper-based handouts.
- *Assessment and teaching methods* (評量與教學方法). The suggestions are listed below. They are students’ oral presentation, teacher- and peer-oriented review and assessment,

terminology and content knowledge tests, multimodality delivery, and adjustable timetable and scheduling for content teaching.

5. Conclusion 第五章 結論

This study first aims to review the relevant studies, conduct in-depth interviews, and analyze and summarize interview and literature data, which will benefit the response to the Bilingual 2030 policy launched by the government in Taiwan and MND English language enhanced practices and programs. Then, this study uses the abovementioned results as a theoretical base to connect EMI curriculum consideration to logistics-relevant courses and provide the potential for enhancing students' competitiveness, effectiveness, and English language proficiency.

The results from the literature review and in-depth interview are summarized below. These findings address the two research questions in the Introduction section. First, given students' English and specialized knowledge level, this study suggests that the logistics/SCM skill requirements for officer and sergeant logisticians are focused on the logistics dimension but can be represented by an operational and managerial level.

The secondary category of results relates to curriculum design. The course objective (教學目標) is to develop domain-specific, including logistics and products, purchasing and supply, warehousing and inventory, transportation and distribution categories, and general language skills students need in the EMI course. The students' characteristics (學生屬性) factor is to be capable of using English skills for the acquisition of discipline content knowledge. The instructors' characteristics (教師屬性) factor is to aid students' understanding of content knowledge by using general language skills and EMI teaching methodology and instructions.

The third category of the findings concerns teaching content and skills. The categories of the main subjects and the sub-subjects are listed as follows: (1) logistics and products (物流與商品) and the sub-subject is logistics revolutions and the issues for new modern logistics/SCM (物流演進與未來趨勢); (2) purchasing and supply (採購與供應) and the sub-subject is procurement for military or international facilities, materials, and resources (軍事或國際物品採購); (3)warehousing and inventory (倉儲與存貨) and the sub-subject is information and communication technology and warehousing facilities and tools (科技與倉儲設備); and (4) Transportation and distribution (運輸與配送) and the sub-subject is Introduction to international trade (國際貿易概論).

Last, this study provides the findings concerning teaching methods and assessment. The results of teaching materials (教材資源) suggest that English-edition learning materials and Chinese-edition handouts or prerequisite lectures enhance students' EMI learning. The results of resources (教學資源) stress the importance of the financial, educational, and administrative resources provided by the university administration institutions. The results of assessment and

teaching methods (評量與教學方法) highlight that it is essential to provide multimodality delivery, multi-level assessment, and adjustable scheduling and instructions for effective EMI teaching and learning.

Overall, this study contributes to military and educational benefits. The results allow logistics practitioners in the armed forces to re-examine their critical skills and knowledge and consider operational- and managerial-level logistics requirements in response to the increasingly globalized and digital logistics/SCM operations environment. Furthermore, this study's results help educators and learners by providing detailed suggestions and guidance on preparing, conducting, evaluating, and re-designing the curriculum to achieve the effectiveness of an EMI logistics management course.

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