

Routledge Studies in English-Medium Instruction

RETHINKING EMI

MULTIDISCIPLINARY PERSPECTIVES
FROM CHINESE-SPEAKING REGIONS

Edited by

Lily I-wen Su, Hintat Cheung, and Jessica R. W. Wu



Rethinking EMI

Due to the competitive edge it confers on students, educational institutions, and non-English speaking nations in a globalized economy, English as a medium of instruction (EMI) has been gaining popularity in tertiary education in non-native English-speaking (NNES) countries. Institute-wide EMI implementation has often been imposed by top-down decisions, in combination with the optimistic view that the horse should always be placed before the cart. However, emerging evidence suggests that the delivery of such programs to NNES students has led to new pedagogical challenges and learning problems that go beyond the scope of language learning and teaching and deserve immediate attention. For example, how would an instructor respond to situations in which students' learning of content is compromised by their limited language proficiency? This book draws on the current practice of EMI in diverse disciplines and university settings and examines how these new pedagogical and learning issues can be addressed. The discussion also involves a reflection on the essence of EMI in relation to the use of the first language (L1) as the medium of instruction in tertiary education. In addition, this book includes discussion about how to ensure and maintain the quality of EMI programs and assess the readiness of stakeholders for such programs, which include administrators, teachers, and students. The discussion is led by exemplars of EMI implementation in Hong Kong and Taiwan, where the majority of students are native Chinese speakers, in the hope of developing critical perspectives and practical guidelines as references for EMI in other NNES settings.

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Routledge Studies in English-Medium Instruction

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ROUTLEDGE

Routledge

Taylor & Francis Group

LONDON AND NEW YORK

First published 2021
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
605 Third Avenue, New York, NY 10158

Routledge is an imprint of the Taylor & Francis Group, an informa business

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British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

A catalog record has been requested for this book

ISBN: 978-0-367-37022-0 (hbk)

ISBN: 978-1-032-03438-6 (pbk)

ISBN: 978-0-429-35236-2 (ebk)

DOI: 10.4324/9780429352362

Typeset in Times New Roman
by Newgen Publishing UK

Contents

<i>List of figures</i>	vii
<i>List of tables</i>	viii
<i>List of contributors</i>	ix
<i>Foreword</i>	xiii
LILY I-WEN SU	
1 Exploring the language and pedagogical models suitable for EMI in Chinese-speaking higher education contexts	1
JOYCE SHAO CHIN AND NAIHSIN LI	
2 Implementing EMI in medical education in Taiwan	21
SHUN-HUA WEI AND JONATHON HRICKO	
3 EMI for information engineering students: A case study	42
SALLY CHEN AND SHOU-DE LIN	
4 Supporting students' summary writing skills in English medium instruction in the university context	61
YANGYU XIAO AND HINTAT CHEUNG	
5 Conducting EMI with students of diversified backgrounds: The case of business management	78
HSIOU-WEI WILLIAM LIN AND ANITA CHUNWEN LIN	
6 The use of English in linguistics classes: When and how do we do it?	97
MIAO-HSIA CHANG AND LI-HSIN NING	

vi *Contents*

7	Assessment practices in the EMI classroom in Chinese-speaking higher education contexts: Challenges and considerations	124
	NAIHSIN LI AND JESSICA R. W. WU	
8	A dynamic language ability system framework for diagnosing EMI students' readiness of English language ability	141
	YUYANG CAI AND HINTAT CHEUNG	
9	Toward an effective transition to adopting English as the medium of instruction: A case from Hong Kong	161
	TAE-HEE CHOI AND BOB ADAMSON	
10	Conclusion: Dynamic interactions across academic disciplines	177
	HINTAT CHEUNG	
	<i>Appendix: A checklist for EMI readiness (including the readiness of teachers and institutions/universities)</i>	183
	<i>Index</i>	185

Figures

0.1	Types of disciplinarity	xv
2.1	Students' competence in medical specialties and English after academic training	26
2.2	Four components in development of EMI courses	28
3.1	Course design and language choice of TWRM	53
5.1	Steps and procedures recommended for conducting case study sessions	86
5.2	Methods recommended for assigning case discussions to specific groups	87
5.3	Steps and procedures recommended for implementing team projects	89
5.4	Steps and procedures recommended for implementing cold-calling strategy	90
6.1	Linguistics and disciplinary categories (based on Neumann et al., 2002)	98
8.1	Progressive assessment of the DLAS	148

Tables

2.1	Students' entry level scores on the General Scholastic Ability Test (GSAT) and mandatory English courses and credit hours	30
2.2	Recommended EMI courses in medical education	30
2.3	Three levels of EMI courses	31
2.4	Criteria for students' English competence before graduation	33
2.5	Estimation of qualified EMI teachers in medical schools in Taiwan	36
5.1	Sample case questions to be responded to in the 2-page written report	87
5.2	Dos and don'ts for conducting case study sessions	87
5.3	Dos and don'ts for assigning team projects	89
5.4	Dos and don'ts for asking questions to engage students in the learning process	91
6.1	The participants' English proficiency levels according to GEPT rubrics	106
10.1	Conceptual dimensions of ROAD-MAPPING	178

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Foreword

Lily I-wen Su

Over the past decades, it is globalization that has had the greatest impact on the English language, making it now a world language and an increasingly important medium in the drive toward internationalization. Innovation becomes fundamental, begging for new methods and approaches to English language teaching—methods and approaches that emerge from the traditional dominant pedagogical paradigms. This in turn forces many educators to be proactive, creative, and dynamic in their teaching practices.

As a result, CLIL (Content and Language Integrated Learning) was originally defined in 1994, and launched in 1996 by the University of Jyväskylä in Finland and the European Platform for Dutch Education. Marsh (2002), the first to promote CLIL, describes it as an educational method in which “subjects are taught through a foreign language with dual-focused aims, namely the learning of content, and the simultaneous learning of a foreign language.” This definition clearly implies that CLIL includes not only the teaching of content but also stresses the importance of the instruction language, as Marsh (2002) reiterates: “Language pedagogy focusing on meaning which contrasts to those which focus on form” (p. 49). The practical consequence of this is that educators need to pay close attention to the fact that students are learning content through a language that demands instruction and prior knowledge. In this vein, CLIL becomes an umbrella term to cover “learning through any language that is not the first language of the learner” (Ball, 2006) and refers to any dual-focused educational context in which an additional language, usually not the first language of the learners, is involved. Both subject-specific content and language are given simultaneous attention, and both are essential to the learning process (Marsh, 2003). The language is used as a tool for learning the content of the subject, and the content is used as a meaningful medium to learn and use the language communicatively.

The ERASMUS+ Transnational exchange of good CLIL practice among European Educational Institutions project of 2015–2017 by project members of all levels of education from five EU countries (Lithuania, Latvia, Italy, Sweden, and Slovakia), found that, other than the need to enhance the project competence of CLIL teachers, an interdisciplinary approach to learning is a key part in any attempt to internationalization of higher education. Many

language initiatives implementing this principle have emerged (Brinton et al., 2003; Richards & Rogers, 2014). Indeed, CLIL has been used as a crucial way to improve foreign language teaching and learning around Europe at all levels of education. Moreover, application of CLIL to the learning-teaching environment has also been attempted by many Asian and Latin American researchers and practitioners.

In view of the influence of CLIL, some scholars consider English as a medium of instruction (EMI), or, for that matter, English for specific purposes (ESP), or any form of bilingual education as an extension of CLIL application. This is however not our view of EMI, though. Whereas CLIL is focused on interdisciplinary curricula or cross-curricular planning, EMI, at least in terms of the context of higher education, is in fact a transdisciplinary approach to student-centered teaching.

The term *transdisciplinarity*, combining Latin prefix *trans* meaning “across, over, beyond,” refers to the emergence of a new discipline transcending the boundaries of disciplinary perspective. It combines **inter**disciplinarity with a participatory approach. The term originated in a critique of the standard configuration of knowledge in disciplines, and was first voiced as a result of a clash between government-supported science and higher education in the 1970s. Transdisciplinary research paradigms strive to involve participants in the process of reaching a common goal, usually the solution to a problem of society at large. Transdisciplinarity should be considered as the culmination of interdisciplinary efforts. As a contrast, interdisciplinary collaborations create new knowledge synthesized from existing disciplines, but a transdisciplinary team repositions all disciplines to a new, coherent whole (McGregor, 2004).

Earlier work on transdisciplinarity focused on the question of planning future universities and educational programs, something which became an urgent issue in the 1990s due to transdisciplinarity’s relevance to the solution of new global concerns, with special reference to education. Bernstein (2015) characterizes transdisciplinarity by its focus on “wicked problems”—problems with social impact that need creative solutions dependent on stakeholders’ involvement. Work of a transdisciplinary nature offers the potential to invigorate scholarly and scientific inquiry, in and outside the academia

Language is clearly the key to communication and understanding in the classroom. EMI should not be misunderstood as allowing one, and only one, single foreign language to dominate classroom interaction. The so-called (total) submission, in which students are taught in the target language only, makes learning and teaching in a target language extremely difficult, especially when the language of instruction is also foreign to the teacher. With EMI, such difficulty is compounded by further chronic difficulties, such as low levels of teacher education and inappropriate and/or poorly designed curricula. A study conducted at a large public Italian university to explore the attitudes of EMI lecturers revealed that many of them were concerned with the standard of their English proficiency, and more than 25% of lecturers

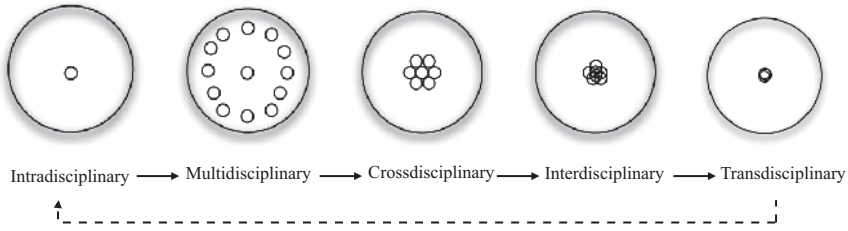


Figure 0.1 Types of disciplinarity.

Source: www.arj.no/wp-content/2012/03/interdisciplinary.png

also revealed, contrary to the assumption in Costa & Coleman (2013), concern over teaching methodologies. A well-designed EMI program should take advantage of the learner's first language so that the content can be taught systematically, allowing learners to gradually transfer skills from the familiar language to the less familiar one.

Jensenius (2012) provides an informative figure, as shown in Figure 0.1 above, illustrating the progression from intradisciplinary, to interdisciplinary, and finally to transdisciplinarity.

This figure fits well with what we want to share in this book: the transdisciplinary nature of EMI. Our purpose is to contribute to the understanding of transdisciplinarity in higher education, its governance, structure, and pedagogy. All the chapters are written by scholars from two chosen Chinese-speaking academic communities, Taiwan and Hong Kong, featuring research conducted by educational institutions devoted to such practices. The collection of chapters as a whole presents a range of perspectives that reflect unique attempts to steer a path of intellectual challenge and practical exploration undertaken by the chosen higher education sectors.

The book thus aims to raise awareness and disseminate good practices to serve as a resource for instructors and researchers devoted to higher education. Throughout the book, Pohl and Hadorn's (2017) "contextualization" is used as an acknowledged concept in the discussion of transdisciplinary studies, which reflects the major achievements of these authors. This book intends, in addition, to serve as an exploration forum of how we perceive transdisciplinarity and how it might shape the practices of those involved in higher education in terms of knowledge generation, teaching and learning policy, and its content. This is a serious attempt to understand, reflect on, and comment on the issues of transdisciplinarity in higher education.

If one ever wonders why we restrict the discussion to EMI for higher education, and not all levels of education, we would like to stress the fact that higher education has now shifted from being a privilege for the rich or otherwise fortunate to a right for all. The nature of education is in a way commercialized in the process, both in its provision and in its curriculum content. We hope to develop a widely-based transdisciplinary understanding of

the issues faced by higher education institutions and those who work with and within these institutions. Higher education may rapidly lose its potency within the economic realities of the 21st century unless it finds ways to respond to the critical and often non-disciplinary concerns of society. This period of change, driven by a growing globalization of opportunity, provides a chance to bring together transdisciplinary theorists and practitioners from the chosen regions to discuss the concerns higher education cannot escape.

English now exerts a considerable influence in many non-anglophone societies, and therefore a need for language and content integrated learning and teaching arises in order to prepare future professionals to face this rapidly-changing world. This situation gives the learning and teaching of English a worldwide importance it has never had before. We therefore hope that the subject areas chosen, together with the structuring of the book, may offer distinctive insights and rich grounds for further research.

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1 Exploring the language and pedagogical models suitable for EMI in Chinese-speaking higher education contexts

Joyce Shao Chin and Naihsin Li

Introduction

The global spread of English has had a significant impact on higher education (HE) worldwide. English has been increasingly used as a vehicular language to transmit academic knowledge at tertiary institutions throughout the world. In the process, the role of English has been recast from an “object” of instruction in English classes to a “medium” of instruction in subject content classes. Dearden (2014, p. 4) proposes the following working definition of English as a medium of instruction (EMI):

The use of the English language to teach academic subjects in countries or jurisdictions where the first language (L1) of the majority of the population is not English.

Although Dearden (2014) applies the definition to EMI at all levels of education, this working definition, for two reasons, provides a proper starting point for a discourse on EMI at the tertiary level. First, this definition excludes the use of English as a second language (L2) to teach academic content in countries such as Australia, Canada, the UK, and the US, where English is the predominant L1, and thus places its primary focus onto EMI in non-native English speaking (NNES) contexts. This emphasis on NNES contexts is crucial to our discussion of EMI. As our review of the global development of EMI will show, differences in the role of English in education have resulted in context-specific problems and considerations in EMI implementation. A lot of these problems and considerations deserve our particular attention when conceiving the language and pedagogical models suitable for EMI in Chinese-speaking contexts. Furthermore, Dearden’s (2014) definition draws a conceptual distinction between EMI and Content and Language Integrated Learning (CLIL), another term associated with teaching subject content through an additional language. Whereas CLIL emphasizes its “dual-focused” approach to advancing both content and language learning (Coyle et al., 2010, p. 1),

the primary aim of EMI, as the above definition implies, is on the mastery of subject content. Dearden and Macaro (2016) reiterate the centrality of academic content and stress that EMI makes “no direct reference to the aim of improving students’ English ability” (p. 456). Brown and Bradford (2017), examining several definitions of EMI in the literature, conclude that English language improvement has generally been perceived in these definitions only as “an implicit or incidental outcome” (p. 330).

Nonetheless, as this book focuses on tertiary-level EMI in NNES contexts, the particularity of tertiary education, coupled with the constraints resulting from students’—and sometimes teachers’—insufficient English proficiency, suggests the need to go beyond Dearden’s (2014) definition and rethink language use in EMI at universities in NNES countries and regions. In the first place, the cognitive and linguistic demands of academic studies in tertiary education are substantially higher than those in primary and secondary education. University study entails the acquisition of a new skill set for constructing and transmitting academic knowledge, one which involves higher-order cognitive processing skills and discipline-specific communication conventions. The acquisition of these academic competencies can be challenging for native speakers of English entering higher education (Reason et al., 2006). For NNES students in EMI classes, limited English proficiency further increases the linguistic and cognitive loads of their academic studies. A substantial number of empirical studies have revealed the difficulties NNES students experienced in comprehending and communicating about course content in EMI classes (Chang, 2010; Evans & Morrison, 2011a; Huang, 2018; Li & Wu, 2017). These difficulties consequently pose pedagogical challenges to teachers, who generally lack the expertise to address language-related learning problems, and sometimes might not have adequate command of English to deliver EMI.

Further complicating the matter is an over-optimistic view about EMI prevalent in Asian universities. Whereas EMI, by definition, does not aim for English language improvement, it is often implemented in Asian HE contexts with the expectation of improving domestic students’ English proficiency. In other words, it is believed that EMI can maximize students’ exposure to English and, further, lead to improvements in their English proficiency. This expectation is observed not only in studies examining teachers’ and students’ perceptions of EMI (Lei & Hu, 2014; Li & Wu, 2017), but also in governmental-level EMI-related policies promulgated by many countries and jurisdictions in Asia (Byun et al., 2011; Tsou & Kao, 2017; Zhao & Dixon, 2017). In Chinese-speaking contexts, as EMI is often termed “whole” English instruction in Chinese—although officially termed a “bilingual course” in China (Zhao & Dixon, 2017, p. 1)—it is often practiced, or expected to be practiced, as English-only instruction so as to provide students with an English immersion experience in an English as a foreign language (EFL) context. There have been mixed findings regarding the effectiveness of EMI in improving English proficiency (Huang, 2015; Lei & Hu, 2014; Li, 2017). However, a growing body of evidence, as aforementioned, suggests that the

delivery of such programs to NNES students, Chinese-speaking students included, has led to new pedagogical challenges and learning problems.

These problems and challenges go beyond the scope of a monoglossic English-centric view of EMI and call for a heteroglossic non-English-centric perspective. The concept of translanguaging deserves our attention. Originally from the Welsh term *trawsieithu*, translanguaging has been increasingly used in education to refer to “the process by which bilingual students perform bilingually in the myriad multimodal ways of classrooms—reading, writing, taking notes, discussing, signing, etc.” (García, 2011, p. 147). In a study investigating the adoption of translanguaging practices in a bilingual high school in the US, García and Sylvan (2011) report the observation that “students use *diverse* language practices for purposes of learning, and teachers use *inclusive* language practices for purposes of teaching” (p. 397, emphasis added). For tertiary-level EMI instruction in an EFL context, the most immediate implication of translanguaging is that students and teachers should be encouraged to draw on their full linguistic repertoires, including using their first languages, to cope with the demands of English-medium learning and teaching. A more effective pedagogy of translanguaging, as mapped out in García and Li (2014), requires systematic planning of translanguaging strategies to facilitate the construction of and communication about content knowledge.

This section begins with a reexamination of Dearden’s (2014) working definition of EMI in connection with the challenges of tertiary-level EMI in NNES contexts. The problems identified through the reexamination indicate the inadequacy of an English-only approach to EMI, and the concept of translanguaging gives a perspective for conceiving an alternative approach more viable for NNES universities. With these challenges, problems, and perspectives in mind, we will first trace the development of EMI in NNES contexts and then explore the growth and impacts of EMI in Chinese-speaking contexts.

The development of EMI in NNES contexts

The past three decades have witnessed an exponential growth of EMI practices in tertiary education in countries and regions where English is learned as a foreign language. This growth has been documented in a number of multinational studies. Dearden (2014), using British Council staff as informed participants, reported that 44 out of the 55 participating countries and regions allowed EMI provision at both public and private universities. Studyportals, a Dutch-based organization, investigated their database of information on 1,000 universities at the top of international rankings and identified almost 8,000 courses being offered in English in 2016 at leading universities in NNES countries (Mitchell, 2016).

The phenomenal growth of EMI in tertiary education in EFL countries can be attributed to various reasons. Although great diversity exists in different

education settings, the following driving forces behind EMI policies have frequently been cited in recent literature (e.g., Galloway et al., 2017; Macaro et al., 2018; Wächter & Maiworm, 2014):

- raising the international profile and competitiveness of the university;
- attracting foreign students by lifting language barriers for their enrollment (to compensate for shortages of domestic students);
- increasing the international mobility and employability of students, faculty and staff;
- creating “brain gain” by attracting foreign students and faculty who could contribute to the future work force;
- gaining access to the exchanges of academic knowledge and to the domain of research publications where English is the dominant lingua franca;
- enhancing the intercultural competencies of domestic students; and
- improving the English proficiency of domestic students.

Among the above seven driving forces, the first six are directly related to HE internationalization.¹ As we will see in the following descriptions of the EMI development in Europe and Asia, EMI provision has been perceived as both the instrument for and indicator of HE internationalization, but the actual outcomes are far more complex. As for the last driving force, the improvement of domestic students’ English proficiency, as pointed out in the discussion of EMI definition in the previous section, was initially considered merely a side benefit of EMI. However, in practice, EMI has frequently been implemented, especially in Asian universities, with the expectation of improving the English abilities of local students. Issues related to this expectation will be further explored in the review of EMI in Asian and Chinese-speaking contexts.

EMI in European universities

In Europe, the adoption of the Bologna Declaration in 1999 by 29 European countries stimulated the widespread expansion of EMI in tertiary institutions. The supra-national declaration aimed to enhance the comparability of HE systems in Europe by converging the degree structures of European universities. This “convergence” process has encouraged the provision of EMI and English-taught programs (ETPs), as these practices have been perceived to remove the language obstacles hindering the mobility of students, faculty, and staff among universities in European countries. The substantial growth of ETPs in Europe was systematically tracked in Wächter and Maiworm’s comparative studies in 2007 and 2014 (Wächter & Maiworm, 2007, 2014).² The results found a massive 239% increase in the numbers of ETPs over seven years, from 2,389 in 2007 to 8,089 in 2014 (Wächter & Maiworm, 2014).

Considering that international mobility is central to the drive toward EMI in Europe, the student-mix data derived from Wächter and Maiworm’s (2014) survey deserves further attention. First, in terms of overall student intake,

54% of the students enrolled in the surveyed courses were foreign students. Furthermore, among the 8,089 ETPs identified in the study, approximately 5% enrolled only domestic students, whereas about 10% enrolled only foreign students. These data indicate that most of the ETPs surveyed had a mix of foreign and domestic students, which created a context for English to function as the academic lingua franca.

However, as noted in Hultgren's (2019) critical review, EMI has been imposed, rarely with well-planned strategies, on faculty, staff, and students in European universities. Therefore, the increased use of EMI has drawn mixed views from these stakeholders, including concerns about its negative impacts. One of these concerns noteworthy for our discussion of EMI in Chinese-speaking contexts is the domain loss of L1—that is, the dominance of English as the hegemonic language of communication at the expense of the home language. Wilkinson (2013) cites a decision at a Dutch university to offer new programs in European Studies and European Public Health only in EMI, under the influence of an earlier decision to close programs in economics and business in Dutch and provide solely their parallel EMI programs. For the aforementioned domains, Wilkinson (2013) points out, English-only instruction will constrain the availability of materials on local issues due to the reduced use of texts in home languages. For universities in China and Taiwan where most students share a common L1, domain loss is a crucial issue when planning the roles of L1 in EMI classes.

The above review of the development of EMI in European universities demonstrates that English fulfilled the need for an academic lingua franca among a mix of foreign and domestic students in the ETPs surveyed. However, this role of English as the academic lingua franca also aroused anxiety over the domain loss of L1 due to the hegemony of English as the language of scholarship. These issues are particularly pertinent to the following discussion of the use of EMI in Asian universities and in Chinese-speaking contexts.

EMI in Asian universities

Over the past two decades, the Asia-Pacific has also seen the mushrooming of EMI at universities in NNES countries and regions. As in the case of Europe, EMI has played a central role in the internationalization of Asian universities. Governments across the Asia-Pacific have promulgated various initiatives and policies to exert influence in the planning and implementation of EMI at tertiary institutions, as illustrated in the following examples in Japan and Korea.

In Japan, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) launched the Global 30 Project in 2009 with the purpose of attracting 300,000 international students to study at top-ranking universities by 2011 through the increased provision of EMI. When the Global 30 Project failed to achieve its intended outcome, it was succeeded by another project in a similar vein, the Top Global University Project, in 2014. At the

same time, many universities not included in these government projects also began to adopt EMI, although for slightly different reasons. As pointed out in Chapple (2015), in addition to recruiting international students, many universities envisioned the potential of EMI to improve Japanese students' English proficiency through the immersion context provided.

In 2007, the South Korean government announced its strategic plan for the internationalization of Korean universities. Byun et al. (2011) examined the relevant government documents and summarized the following rationale for promoting EMI in HE, which included: (1) preparing students for their future careers by boosting their "internationally-oriented skills" (p. 432); (2) attracting visiting scholars to teach and international students to study; and (3) enhancing the language skills and confidence of faculty members in order to raise their abilities to interact in the global academic world.

The above brief review of EMI policies in Japan and South Korea, in the first place, demonstrates the top-down policy decisions involved in EMI, akin to those in Europe, but at the national level. Another point for reflection is the expectation expressed by governments and universities that EMI can help to enhance the English proficiency of domestic students by maximizing their exposure to English. The same expectation has also been reported in research on the use of EMI in many other Asian universities. In the next section, we will delve into the development of EMI in three HE contexts where the majority of the students are Chinese-speaking: China, Taiwan, and Hong Kong.

The growth and impact of EMI in Chinese-speaking contexts

To cope with global competition, the internationalization of universities in China, Taiwan, and Hong Kong has accelerated at a fast pace over the past two decades, stimulated by numerous government initiatives. However, in terms of EMI implementation, differences in the status of English due to historical reasons have resulted in divergent paths of development in these three Chinese-speaking contexts. In China and Taiwan, where English is a foreign language and Chinese is the predominant language of instruction in primary and secondary schools, the processes of implementing EMI in tertiary education and its growth patterns are similar to those of Japan and Korea. Hong Kong, though, is a different story. As a former British colony returned to China in 1997, it has a long history of the coexistence of English- and Chinese-medium schools. Hong Kong's experiences in bilingual education give a perspective valuable for universities in China and Taiwan when considering the roles of English and Chinese in their specific EMI contexts.

It should be noted here that Singapore, though with an ethnic Chinese majority, will not be included in the following discussion of EMI in the Chinese-speaking contexts. The rationale for this exclusion is related to the preeminence of English in education in Singapore and its impact on the status of other major languages.³ As part of the government's ongoing effort to consolidate the position of English as the *lingua franca* in this multilingual

nation, a unified language policy was promulgated in 1987, which stipulated English as the sole medium of instruction for all levels of education (Bolton & Botha, 2017). A noteworthy effect of this “English and mother tongue” policy, revealed in the General Household Survey in 2015, is the increasing use of English as the home language. The 2015 survey found English has become the most frequently spoken language at home for 36.9% of residents, up from 32.2% in 2010 and just ahead of Mandarin, at 34.9%. The prevalence of English in daily life indicates Singapore has a linguistic ecology which is quite distinct from that of China, Taiwan, and Hong Kong. Hence, the following sections will focus on the development paths of EMI in these three Chinese-speaking contexts.

EMI in China

The first government guidelines in China to promote EMI in undergraduate programs were issued by the Ministry of Education in 2001. Specific requirements were further stipulated in the *Assessment Standards for Undergraduate Education in Chinese Higher Institutions* (henceforth referred to as the Assessment Standards) published in 2004. The Assessment Standards require that in designated disciplines, at least 10% of the courses offered should be delivered in EMI. However, it should be noted that in the above document, the EMI course was defined as “a course that adopts English textbooks and in which the English instruction time exceeds 50% of all class time” (Zhao & Dixon, 2017, p. 3).

On the basis of these government guidelines, universities across China have been endeavoring to offer EMI throughout the past two decades. In 2006, a survey commissioned by the Chinese Ministry of Education showed that 132 out of the 135 participating universities had implemented EMI courses, averaging 44 courses in each university (Wu et al., 2010; Zhao & Dixon, 2017). More recently, according to the information provided in the *Study in China* website, 620 undergraduate EMI degree programs were being offered in 2018 by 127 universities in 25 provinces in China (Study in China, 2018).

A more nuanced study by Rose et al. (2020) has shown a mixed picture as regards the current and future development of EMI in Chinese universities. This study, investigating 63 Chinese universities, found that the pace of growth varied according to the needs of individual institutions, and some senior administrators even predicted a slowdown in EMI growth rates in the future. More significantly but somewhat contradictorily, a policy analysis of 93 university-level EMI documents showed an increased use of “all English” and “bilingual and/or all English” and a decreased use of “bilingual teaching/instruction” in policy documents produced after 2009 (Rose et al., 2020, p. 14). This indicates a shift in policy toward English-only programs, away from the bilingual models of EMI stipulated in the 2004 Assessment Standards. This emerging trend deserves our particular attention when considering the proper roles of L1 in EMI classes.

EMI in Taiwan

In Taiwan, the first government announcement of the EMI initiative appeared in the *Challenge 2008: National Development Plan* issued by the Executive Yuan in 2002. According to the plan, the intended outcome of EMI provision in tertiary education was “to promote college students’ English proficiency and broaden their international perspectives” (Executive Yuan, 2002). In a recent and more ambitious blueprint, approved by the Executive Yuan in 2018 to develop a bilingual Taiwan by 2030, one of the key strategies is the introduction of a Chinese–English bilingual learning environment and the adoption of immersive teaching methods at all levels of education (Executive Yuan, 2018). These policies across almost two decades reflect the twofold rationale behind adopting EMI we have seen in the cases of Japan and Korea. In the first place, Taiwan, like many countries and regions in the Asia-Pacific, has recognized the crucial role of EMI in HE internationalization. More importantly, the motivation to enhance students’ English abilities through EMI, once again, has been embedded in policy making.

Since 2002, various incentives have been provided by the government to promote EMI implementation. The government’s encouragement has resulted in the remarkable growth of EMI in Taiwan’s tertiary education. In terms of the number of EMI courses, there was a sharp rise from 16,450 courses in 2009 to over 24,077 courses in 2014 (Ministry of Education, Taiwan, 2015; Tsou & Kao, 2017). Meanwhile, the number of EMI degree programs in Taiwanese universities increased from 115 programs in 2005 to 332 programs in 2014 (Ministry of Education, Taiwan, 2015).

Nonetheless, it is noteworthy that in 2019, there were 31,811 international students attending degree programs in Taiwan, which constituted only 2.6% of the total student enrollment (Ministry of Education, Taiwan, 2019). This fact indicates that the majority of students enrolled in EMI courses are domestic students. The implications of this are twofold. First, the learning experiences of Taiwanese students, particularly the challenges they face and the support they need, should be crucial considerations in any discussions about EMI. Furthermore, in an EMI context where Chinese-speaking students constitute the majority, the supportive roles of their L1 should be explored. Both of these implications will be covered in the discussions of the challenges of EMI in Chinese-speaking contexts in the next section.

EMI in Hong Kong

In Hong Kong, over 95% of the population is ethnic Chinese, with Cantonese as the most common home language. Historical developments over the past 150 years have brought the people in Hong Kong unique experiences concerning the medium of instruction (MoI).

English was de facto the only official language until 1974, when Chinese was recognized as a co-official language. During this period, most secondary

schools and universities adopted EMI. There were several attempts over the decades by parents and schools to push for the use of the mother tongue (i.e., Cantonese) as an MoI, but most of the attempts failed. The most plausible reason for this was that the universities, except for the Chinese University of Hong Kong, taught most subjects in English. To prepare students for their future academic needs, most secondary schools ended up adopting EMI. Kirkpatrick (2014) remarks that this “laissez-faire” approach exemplifies how the MoI at the tertiary level can influence the choice of MoI at the secondary level (p. 19).

After Hong Kong was handed back to China in 1997, the Hong Kong SAR government mandated a new language policy of bi-literacy (written Chinese and English) and tri-lingualism (English, Cantonese, and Putonghua) (Xu, 2014). Since then, policies on the use of MoI in primary and secondary schools have swung from limiting the number of EMI schools in 1997 to allowing flexibility in adopting EMI in 2008 and 2009.

At the tertiary level, however, despite the government’s continuing efforts to promote bi-literacy and tri-lingualism, the majority of public and private universities are officially English-medium. This seemingly paradoxical phenomenon, as pointed out in Mok and Cheung (2011), can be ascribed to the policy of establishing Hong Kong as a regional education hub to attract more international students and create brain gain. Evans (2000) commented on the status of English and EMI after 1997 and predicted that “since English will continue to play an important role in the upper echelons of business, the professions and tertiary education in the SAR, Hong Kong parents and students will continue to regard a successful English-medium education as a prerequisite for socio-economic advancement” (p. 200). Nonetheless, Evans and Morrison’s (2011a) study on students’ language use in and outside classrooms at an EMI university suggests despite the growing numbers of international students and lecturers’ efforts to deliver whole-English instruction, students are not motivated to speak English except for the need to communicate with international or non-Cantonese-speaking students. Even inside the classroom, Evans and Morrison (2011a) found that many of the lectures in English were delivered as one-way communication with little interaction, and in seminars, students mainly use Cantonese and a mixture of English and Cantonese to conduct group discussions. The above findings indicate that without supportive learning resources, the immersion environment provided by EMI alone may not help to enhance students’ ability and motivation to communicate in English. On the contrary, the enforcement of English-only instruction might impede classroom interactions.

The above review of EMI development in China, Taiwan, and Hong Kong illustrates how EMI policies have been enforced via top-down decisions and, in the implementation process, interacted with various social and educational drivers, such as aspirations for HE internationalization, expectations of improving English abilities, and the wrestling to maintain or enhance the status of the different languages and cultures involved. The rapid expansion

of EMI in Chinese-speaking contexts, as aforementioned, has prompted a substantial growth of empirical studies investigating the implementation and effects of EMI in tertiary education. These studies have uncovered the experiences and perspectives of students and teachers in EMI classes and also highlighted the significance of context-specific considerations in planning the language and pedagogical models to be used in an EMI course. These issues will be explored in the following section.

Challenges of EMI in Chinese-speaking contexts

Studies have shown that Chinese-speaking students generally hold positive attitudes toward EMI as they are aware of the positive effects of EMI on their English competence, which further benefits their future career or academic pursuits. On the other hand, these studies also reveal the problems with learning in the EMI classroom. Specifically, students face a “double bind” predicament (Bailey et al., 2008) as they try to access new academic content through a language that remains relatively opaque to them, which often results in their limited, if not poor, understanding of the content. Thus, they often indicate difficulties in understanding technical vocabulary and comprehending lectures. In addition, students also have difficulties in expressing themselves orally and achieving an appropriate academic style in writing, mostly because of their limited English proficiency (Evans & Morrison, 2011a; Li & Wu, 2017). In fact, it is suggested that students may need to reach a threshold level of English proficiency to benefit from EMI (Lei & Hu, 2014). However, students’ readiness in terms of English proficiency is often overlooked in EMI programs. Moreover, even a good general English proficiency does not guarantee a painless learning experience in the EMI context, especially when students are used to communicating discipline-specific information in their first language (Evans & Morrison, 2011b). Therefore, there is a role for courses on English for academic purposes (EAP) or English for specific purposes (ESP) to support students’ learning in EMI (Evans & Green, 2007).

Subject teachers in Chinese-speaking contexts also face challenges when they have to teach academic content in English. The teachers’ performance will be evaluated in terms of not only their knowledge or skills in their professional domain but also how good their English is. Even when teachers have a sufficiently good command of English to run the classes, they will have to address language-related learning issues or assessment concerns, which appear to be more within EFL teachers’ expertise. Therefore, EMI teachers need resources, such as development programs, to support their pedagogical needs in the EMI classroom. Collaboration between content and language teachers has been proposed as one remedy to students’ learning issues in the EMI classroom (Cots, 2015; Wilkinson, 2013); however, relevant research has been scarce.

The use of English as the dominant instructional language in a classroom where teachers and students are non-English native speakers to a certain

extent affects classroom interaction and the depth of content learning. Studies reveal that students are more likely to remain silent in EMI classrooms than in classrooms where Chinese is the instructional language (Hu & Li, 2017; Huang, 2018). In other words, EMI classrooms tend to be monologic in nature, with few student-student or teacher-student interactions, a situation which may be detrimental to learning.

Universities play a critical role in facilitating the implementation of EMI. As EMI is enforced top-down (Tsou & Kao, 2017; Zhao & Dixon, 2017), universities face challenges in creating a school- or department-wide atmosphere receptive to this policy. Insufficient communication among the stakeholders, including policymakers, administrators, teachers, and students, in terms of the purposes, principles, practices, and expected outcomes of EMI may result in resistance or tension, such as in the case of the Chinese University of Hong Kong (Li, 2015). In addition to communication with stakeholders, universities need to consider the resources and support required by teachers and students and take necessary measures. Flexible application of the EMI policy should also be considered in terms of the nature and the curriculum of different disciplines and the role or functions of English in specific disciplines.

Rethinking EMI in the Chinese-speaking higher education context

An increasing number of studies have been conducted to examine the implementation of EMI in different institutions and across different disciplines, as well as the perceptions or attitudes toward EMI of stakeholders in these regions. The findings of these studies, though descriptive in nature, contribute to a mosaic picture of current EMI practice and highlight the challenges and concerns of stakeholders. We think the time is ripe for us to move one level down and conduct an in-depth examination of the essence of EMI in non-native English-speaking contexts and its implementation from a curriculum point of view. We have observed considerable variation in expectations and support for EMI at the institutional level and in learning needs from mixed student bodies with varied levels of English proficiency. Therefore, the purpose of this book is to go one step further by addressing the issues observed in diverse disciplines and university settings—using practices in Hong Kong and Taiwan as leading examples for discussing how collaboration should be conducted within whole educational systems to accomplish successful EMI.

Rethinking the means-end value of EMI

The first aim of this book is to present critical perspectives on the nature of EMI in tertiary education in Chinese communities. There is no established consensus on some important issues regarding the nature of EMI, such as the exact role of English in the EMI classroom and its relation to the local language(s) in a bilingual/multilingual community, nor on the outcomes that stakeholders expect from EMI programs. For example, EMI is often practiced

in the hope of enhancing students' English proficiency in addition to their subject knowledge. However, it is now seen as a double-edged sword in that it can improve students' language ability, on the one hand, but on the other hand, it can also compromise students' learning of subject knowledge (Tsou & Kao, 2017; Zhao & Dixon, 2017).

Therefore, we propose that in EMI courses, English should be used because it is an appropriate "medium" of instruction, but not because it is also an "object" of instruction (Fenton-Smith et al., 2017, p. 2). In addition, EMI should be adopted only when there is sufficient evidence that students are ready to use English as an appropriate vehicle for academic studies. This viewpoint has led to a discussion on the model of English (i.e., English as a lingua franca) and its expected degree of dominance in an EMI classroom in a NNES context. In particular, it is proposed that EMI should not be conceived of and practiced as English-only classes. Instead, the practice of EMI should be conceptualized as a continuum of English used to deliver content knowledge, with English-immersion courses as the realization of one end of the continuum and the different degrees of involvement of students' other linguistic resources in the remaining spectrum.

The aforementioned conceptualization of EMI echoes the concept of translanguaging reviewed in the first section of this chapter. A translanguaging-informed approach to EMI emphasizes the proper role of a student's first language. In fact, there are similar discussions in EMI literature. For example, a distinction is made between full EMI and partial EMI (see Pecorari & Malmström, 2018). Nevertheless, we think that there can be more nuanced discussion about the choice, planning, and practice of the mediums of instruction in the EMI classroom. In particular, Kirkpatrick (2014) has made a distinction between medium of instruction and classroom language (CL), with the latter referring to the language of interaction between teacher and students and among students in the classroom. What we are trying to add to EMI practice is a proper status for the use of Chinese as a classroom language in Chinese-speaking contexts. This is where our concept of "continuum" converges into a translanguaging-informed approach to EMI.

Despite our emphasis on the role of L1, we still acknowledge that there is a need to support EFL students' learning of discipline-relevant academic English. In particular, there is a close interplay between knowledge of academic discourse/literacy and academic learning, as the mastery of discipline-specific discourse is a prerequisite of deep academic understanding (Meyer et al., 2015; Mohan et al., 2010; Scardamalia & Bereiter, 2006). However, the learning of English should not be incorporated as a curriculum goal of EMI courses, especially when the EMI teachers do not have the time or even the training to teach a foreign language. Therefore, instead of proposing a dual-focus on content and language in EMI courses, we prefer a "dual-track" model in which EMI courses and ESP/EAP courses serve their own functions (i.e., content learning and language learning, respectively), but with better integration of the course content as well as collaboration or communication

between the content teachers and the language teachers. We believe that a dual-track system is more beneficial to students' advancement in their discipline expertise and academic English ability than a curriculum embedded with the dual goals of content and language learning (i.e., CLIL) at the tertiary level of education.

CLIL and EMI both involve content learning and the use of a foreign language as the instruction medium. However, there is a subtle but important difference. While CLIL, as a framework, is more on the side of student learning, in particular language learning, EMI, which is often practiced with global concerns, such as internationalization of the curriculum and attraction of non-local students, deems the learning of subject matter as more important. However, previous work on EMI mostly focused on the language learning side. For example, Tsou and Kao (2017) mostly address language issues in the EMI class. Similarly, Barnard and Hasim (2018) discuss EMI challenges and solutions from the perspective of applied linguistics. Though the role of language is important in EMI, we think that the success of EMI should depend on the learning outcome of the subject matter. Therefore, this book calls for a rethinking of EMI from the subject learning perspective.

As a synthesis of the viewpoints discussed in the above critical review of EMI in Chinese-speaking HE contexts, we propose the following modified definition of EMI, adapted from Dearden (2014), which better fits the purpose of this book:

EMI refers to the use of the English language to teach academic subjects in countries or jurisdictions where the first language (L1) of the majority of the population is not English. Its primary objective is on the mastery of subject content, with English language improvement as a secondary or incidental outcome. For tertiary education in NNES contexts, EMI is conceived as a continuum of English use to deliver academic content, rather than a practice of whole-English instruction. Having taken into account the academic demands of specific EMI contexts, the proper roles of English and the students' L1, together with other semiotic resources, should be pedagogically planned, along with the provision of EAP/ESP resources to support learning.

Discipline-specific pedagogical issues and good practices in EMI

This book is also devoted to providing guidelines for instructors who are facing pedagogical challenges in different EMI settings. Studies on the EMI classroom in NNES contexts have highlighted some common pedagogical challenges and discipline-specific concerns. In this book, experienced EMI teachers from various disciplines have been invited to demonstrate their pedagogical practices in addressing students' learning problems and to reflect on the contextual factors involved in refining their practices in the future. Implementing EMI in a wide variety of disciplines will be covered, including

medical science, mathematics, health and physical education, computer science, creative arts, music education, business management, and linguistics. These EMI courses represent a spectrum of weak-to-strong English dominance, demonstrating various possibilities for EMI arrangements and how to serve their particular stakeholders. In addition to drawing on the valuable experiences of EMI subject instructors from different disciplines, this book integrates the perspectives of both content experts and language experts, which can effectively help to address issues concerning students' learning of content knowledge in a classroom conducted through a foreign language.

Another aspect discussed here is what constitutes successful EMI in a broader setting, beyond classroom practices. The discussion includes what qualifies as a successful EMI program and what prepares universities, teachers, and students for such a program. Discussions of these issues are highly relevant when policymakers must decide whether EMI is feasible and beneficial to all stakeholders.

Chinese-speaking contexts: Taiwan and Hong Kong

Discussions of these issues are also highly formulated in Chinese-as-L1 regions, contexts that are culturally and linguistically distinct from contexts where English is widely spoken as an L1. In particular, this book draws on the experiences of Taiwan and Hong Kong, where EMI has been implemented in a wide range of disciplines other than medical sciences and foreign language studies. In Taiwan, EMI has often been adopted by universities as a strategy to increase internationalization. While one major aim of implementing EMI is to recruit international students, most EMI programs in Taiwan target domestic students, making teachers in this context more aware of the pedagogical and learning problems that occur in the EMI classroom in an NNES setting. Hong Kong, on the other hand, has been facing an increase in the number of NNES students from non-local regions (e.g., China and other Asian countries) in its universities as a consequence of internationalization in recent years. These institutions have also developed measures to tackle teaching and learning problems in an EMI classroom. Moreover, with its extensive EMI experience and constant and in-depth discussion on the educational impacts of the medium of instruction (e.g., Tsui, 2004; Yip et al., 2003), Hong Kong's experience may enlighten other NNES regions on this issue.

Overview of the chapters

This volume consists of ten chapters. A brief description of each chapter is provided in the following paragraphs.

Chapter 2 discusses the expected learning outcomes and difficulties in implementing EMI in medical education in Taiwan. Specifically, the authors reflect on the best implementation of EMI in Taiwan medical education by considering the purpose of medical education—to foster students' ability to

acquire the most up-to-date medical knowledge in order to serve the medical needs of the local community. Therefore, the best medical talents should be bilingual experts equipped with both professional skills and English competence. However, EMI should not be implemented as an English-only practice; on the contrary, English courses should be strategically integrated into a medical school curriculum in which students' first language still plays a role. The chapter further provides concrete advice on what should be done if EMI were to be implemented in Taiwanese medical schools.

Chapters 3 and 4 present cases in which content teachers and language teachers have worked collaboratively to support students' development of discipline-specific English competence in EMI contexts, either by generating necessary resources or by co-teaching in a classroom setting. Academic writing skills are of particular focus since academic writing is an essential element of the higher education context and Chinese-speaking students have shown prominent difficulties in mastering this skill, given that academic writing "requires a variety of subject-specific literacies."

The Technical Writing and Research Methods course presented in Chapter 3 demonstrates how a content teacher and a language teacher co-teach in a classroom setting to foster Information Engineering students' discipline-specific writing skills in a Taiwanese university. It demonstrates a model of "team teaching" between a content teacher and a language teacher to help students develop academic writing styles and skills as required by their field of expertise, in particular the ability to adequately present their research. This chapter also delineates how the teachers clearly define the role of students' L1 and the role of English with respect to course delivery, teaching materials, students' oral presentations, and assignments, by taking into consideration students' language proficiency and language needs.

Chapter 4 presents a case in the Hong Kong higher education context in which a research team investigates how students' inadequate discipline-specific English language competence may have constrained their learning in EMI. As a result, the research team, content teachers, and language experts worked collaboratively to construct an online learning platform and workshops to support math students' summary writing skills in areas concerning the content and language quality of the summary. Interview data on students' perception of the usefulness of the resources provided indicate the insufficiency of EAP to support learning in EMI contexts and the need to address discipline-specific language needs or language needs at different stages of education (undergraduates vs. postgraduates).

Chapters 5 and 6 reflect on the use of EMI in specific disciplines with regard to its possible benefits and challenges to subject learning. Chapter 5 provides a case study of pedagogical practice in the EMI classroom in the context of business management. The chapter presents the rationale behind adopting EMI in a business college and delineates challenges to it, such as diverse student backgrounds, large class sizes, and lack of teaching materials for local business cases. As case discussions are a common activity in business

courses, this chapter specifically stresses the importance of creating an interactive classroom as a way to engage students in subject learning in an EMI context and further provides practical pedagogical guidelines for conducting interactive activities and assigning collaborative tasks.

Also rooted in the Taiwanese context, Chapter 6 reports on the implementation of EMI in linguistics programs in the Taiwan, where English is regularly employed as the instruction language and the professors and students are usually at an adequate level of English proficiency. The study surveyed linguistics professors and graduate students' perceptions of EMI in terms of its effect on their subject learning. The findings of the study highlight some critical factors that affect the effectiveness of EMI, including students' English proficiency and the complexity and nature of course content. The study also proposes that EMI is best implemented using a moderated approach with strategic switching between Chinese and English.

Assessment has been a less-researched area in studies related to EMI. Based on the review of assessment practices in EMI classrooms in Chinese-speaking contexts, Chapter 7 explores how the assessment concerns identified in such classroom settings can be addressed based on a learning-oriented approach. In particular, it proposes that the role of English in both instruction and assessment should be more carefully considered, more explicit evaluative criteria should be given, scaffolding should be provided to alleviate students' English difficulties, and effective feedback should be provided to foster learning and development. There is also a discussion of the support and resources necessary for enhancing and sustaining EMI teachers' professional development with regard to assessment.

Aware of the fact that students' readiness to take EMI courses lie not only in their English language proficiency, but also in the fusion of general language ability, subject knowledge, and cognitive capacity, Chapter 8 presents the framework of the Dynamic Language Ability System (DLAS), which on the one hand accommodates the complex interaction between language competence, disciplinary knowledge, and thinking competence, and on the other hand, caters to the evolving nature of core components and the interaction mechanism. The DLAS framework may have the potential to diagnose students' English language readiness for EMI study and to evaluate the efficiency of EMI programs.

Chapter 9 presents the case of a university in Hong Kong which switched the main medium of instruction from Classical Written Chinese and Cantonese to English. The chapter demonstrates the driving forces behind EMI-related policies (driven by socioeconomic rather than educational motives) and how the university has provided support to address the changes. By using surveys and interviews, the authors identify facilitators and barriers to effective change. In particular, the interview data still suggest the importance of using students' mother tongue as a learning resource to accommodate students' learning needs. The chapter demonstrates how a structured approach may minimize

the process of trial and error for teachers and students and provides further insights into policy making and planning at the administrative level.

While EMI seems to be an irresistible trend, this book calls for a discussion on the forms of EMI that best suit the needs of NNES students, in particular Chinese-speaking students, in diverse disciplines and university contexts, in order to reach a mutually beneficial situation for universities and their students. As this book addresses the pedagogical challenges of EMI using examples drawn mainly from the Chinese-as-L1 contexts of Hong Kong and Taiwan, it will appeal to readers not only in these and other Chinese-speaking areas, but also to EMI universities in English-speaking and non-English-speaking countries where Chinese-speaking students constitute a significant proportion of the student body. Moreover, the perspectives discussed and proposed in this book are not limited to Chinese-speaking regions, but can also be extended to other NNES regions.

Notes

- 1 Altbach and Knight (2007) defines HE internationalization as a multidimensional process involving “the policies and practices undertaken by academic systems and institutions—and even individuals—to cope with the global academic environment” (pp. 290–291).
- 2 Wächter and Maiworm’s studies in 2007 and 2014 narrowed the definition of ETPs to include only full degree programs at undergraduate and postgraduate levels which were taught entirely in English. The majority of these programs (80%) were postgraduate. Only 20% were undergraduate programs.
- 3 According to Singapore’s General Household Survey in 2015, 74.1% of the population were of Chinese descent, speaking various dialects, 13.3% of Malay descent, 9.1% of Indian descent, and 3.3% of other descent. The survey data is retrieved from www.singstat.gov.sg/-/media/files/publications/ghs/ghs2015/indicators.pdf.

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2 Implementing EMI in medical education in Taiwan

Shun-hua Wei and Jonathon Hricko

Introduction

English-medium instruction (EMI) programs are rapidly being implemented in Taiwanese higher education. One primary goal in doing so is to internationalize higher education in Taiwan. However, the implementation of EMI in medical schools in Taiwan has lagged behind other disciplines. As a result, Taiwanese medical schools are at risk of missing out on the benefits of EMI in particular and internationalization more generally. This chapter aims to identify some of the challenges associated with implementing EMI in Taiwanese medical schools and to offer some guidelines that address those challenges.

In the course of doing so, we follow Chin and Li (Chapter 1) in emphasizing that “English” in EMI is the medium as opposed to the object of study, and that EMI ought to be implemented as part of a dual-track system in which EMI courses aim for content learning, while courses in English for specific purposes (ESP) and English for academic purposes (EAP) aim for language learning.

Internationalization and EMI in Taiwanese higher education

University internationalization is one of the main reasons why universities have implemented EMI programs. Like other Asian regions such as Singapore, South Korea, Malaysia, and Japan, Taiwan regards EMI as an effective means of driving university internationalization and has implemented EMI for a variety of academic subjects (Fenton-Smith et al., 2017). Chin and Li (Chapter 1) provide a useful summary of the current state of affairs regarding EMI in Taiwanese higher education. As they observe, the initiatives that the government of Taiwan introduced in 2002 resulted in a dramatic increase in the number of EMI courses and programs. As of 2019, there were about 66 EMI programs at the bachelor’s level, 263 at the master’s level, and 148 at the doctoral level (Taipei Economic & Cultural Office in Thailand, 2019). A list of 260 EMI undergraduate and postgraduate programs (Taipei Economic & Cultural Office in Thailand, 2019) reveals that 40.8% of these programs are

offered in private universities while 59.2% are offered in public universities. However, as of 2019, EMI courses still accounted for less than 20% of the total courses offered in the four leading Taiwanese research-orientated universities, all of which are public universities (Zhong, 2019).

Taiwan's pursuit of university internationalization, and the resulting implementation of EMI, can be explained by a number of factors. First of all, Taiwan is a small island with a large population and relatively few natural resources. Internationalization is seen as an important means to foster and attract global talents and secure global resources to ensure Taiwan's continued growth and development. Second, internationalization is seen as an important means of enhancing the global competitiveness of Taiwanese universities. Third, an internationalized campus environment is viewed as beneficial insofar as it results in an environment in which local and international faculty, students, and staff use English as a lingua franca in order to exchange valuable knowledge and skills.

Although universities should ideally strive to create and maintain a positive environment that attracts international students and facilitates their interaction with local students, universities in Taiwan face a number of challenges in doing so. Some of these challenges result from the difficulties associated with teaching classes that include both local and international students (Huang, 2015). Universities must find ways to facilitate interaction among students that respect differences in educational needs, language proficiency, and cultural backgrounds. However, as Chin and Li (Chapter 1) observe, international students currently make up a relatively small percentage of the student body in Taiwanese higher education, and the vast majority of students enrolled in EMI courses are local students. As a result, they emphasize the importance of prioritizing the challenges that these local students face and providing them with the support that they need, which requires maintaining a role for local students' first language when implementing EMI.

Other challenges result from the resistance of faculty members to the implementation of EMI in Taiwanese higher education. In 2016, the president of National Chengchi University (NCCU) introduced a policy according to which newly hired teachers must be prepared to offer at least two EMI courses every semester. In response, Chien-San Feng, a professor at NCCU, wrote an open letter to the president in which he condemned this new policy ("New teachers increase English courses," 2016). The letter was subsequently signed by 154 faculty members at NCCU, and it induced a heated debate regarding the place of EMI within higher education in Taiwan. As a result of this controversy, universities have tended to adopt a policy according to which newly hired teachers are not required to offer EMI courses; but job applicants who are able to do so are given higher priority.

Addressing these challenges and concerns is a difficult task, and the development of satisfactory solutions will undoubtedly require a significant amount of work. In the course of working toward solutions, there are a number of points that higher education policymakers should keep in mind as

they pursue university internationalization. First, internationalization does not simply amount to a group of people speaking English in a specific environment on campus. It must involve the flow, both within and across universities, of people who carry knowledge, skills, and values. Second, university internationalization should be viewed as an evolutionary process. It is important for policymakers to realize that time is needed to reshape a school's infrastructure and atmosphere. Third, fostering a positive environment for university internationalization provides a foundation for further development. A positive environment for university internationalization is one in which all stakeholders—local and international students, faculty, and staff—enjoy the benefits of networking and share the knowledge, skills, and other resources that result from it. Fourth, policymakers should recognize the important role that the English language plays in the process of internationalization and should be prepared to use it as an interface for communication. Fifth, the internationalization of higher education will inevitably have an impact on Taiwan, and it is helpful for policymakers to view this process as one that provides positive momentum to reshape Taiwanese universities. Policymakers should therefore set up strategic measures in order to minimize the negative effects and maximize the positive effects of university internationalization.

EMI in Taiwanese medical education

Today, there are 13 medical schools in Taiwan.¹ Some of these schools are located within comprehensive universities while others are not. Students in medical schools in Taiwan are generally required to train for four years as undergraduate students. However, some specialists, such as medical doctors, dentists, pharmacists, and physical therapists, are required to train for six years. Taiwanese medical schools previously provided seven years of educational training, until reforms were instituted for six-year programs in order to bring Taiwanese medical education in line with international standards. Once medical students graduate, they must spend a further two years in hospital-based training. The first and second years of hospital-based training are referred to as postgraduate year one (PGY1) and postgraduate year two (PGY2), respectively.

The first four years of in-school medical education are organized in the following way. The first two years of in-school education are intended to encourage students to embrace a humane spirit. Therefore, many courses in this stage are in the humanities and social sciences, in fields such as literature, sociology, economics, and political science. The third and fourth years focus on fundamental sciences such as gross anatomy, histology, neuroanatomy, physiology, medical genetics, parasitology, and embryology.

The objectives of these courses are designed to help students lay a foundation for further studies in clinical medicine in PGY1 and PGY2. These studies in clinical medicine relate to both disease diagnosis and treatment. Clinical medicine associated with organ disease covers cardiovascular medicine,

pulmonary medicine, nephrology, urology, oncology, neurology, and psychiatry; clinical medicine associated with disease diagnosis covers image diagnosis, pharmacology, and clinical skills.

Although there are a number of EMI programs devoted to medical education in Taiwan, the medical fields lag behind other fields of study when it comes to the implementation of EMI programs. On a list of 260 EMI undergraduate and postgraduate programs compiled in 2019 (Taipei Economic & Cultural Office in Thailand, 2019), a total of 41 (15.8%) are in engineering, 44 (16.9%) are in business, and 45 (17.3%) are in medicine and health. However, these numbers are slightly misleading because 24 of these medicine and health programs are offered at one private university; there are only 21 medicine and health programs at all other universities combined. A finer-grained analysis therefore suggests that, in general, the medical fields have struggled to keep up with other disciplines when it comes to the implementation of EMI programs.

This state of affairs may be explained by the specific requirements of medical education. Courses designed in medical disciplines must be consistent with Taiwan Medical Accreditation Council guidelines. Students must complete many challenging courses within only a few years. As a result, faculty and students are mostly concerned about learning outcomes, and there is little room to embed EMI in courses.

Both faculty and students have expressed misgivings about the implementation of EMI in Taiwan. These misgivings may be compounded by the strict requirements on medical education, which in turn may result in a lack of flexibility in developing EMI courses in medical schools. It must be admitted that these misgivings are legitimate concerns, and in order to implement EMI programs successfully, both in medical schools and more generally, these concerns need to be addressed.

Regarding the implementation of EMI in general, faculty in Taiwan have expressed a number of misgivings. Some faculty are concerned that EMI seems to require sacrificing course content (Huang, 2012). Because of the low English proficiency among some students, teachers worry that an EMI course cannot cover more than a fraction of the content that a traditional first-language course would cover. Faculty in Taiwan have also indicated that EMI courses have the effect of decreasing opportunities for class discussion and increasing various difficulties that teachers encounter in the classroom (Chow, 2018). In particular, faculty have indicated that using English to introduce abstract, complicated concepts to students is a source of frustration. Moreover, although EMI teachers are experts in the content that they teach, they are usually not experts in teaching English, and may not therefore be fully equipped to address the linguistic challenges that students face in the course of learning content via an unfamiliar language (Chin and Li, Chapter 1). As a result, many faculty members in Taiwan believe that too much emphasis on EMI courses in higher education may result in weakening students' professional competence, and that the first language should therefore be the main communicative interface for disseminating content in Taiwanese higher education (Tseng, 2012).

As to students' misgivings about the implementation of EMI in Taiwan, Chin and Li (Chapter 1) provide a useful summary of the difficulties faced, not just by Taiwanese students, but by Chinese-speaking students more generally. As they observe, even students with strong English skills may face difficulties when learning content via English, especially if they are used to discussing this content in Chinese. They also note that students with lower levels of English proficiency face even more challenges insofar as they are required to master unfamiliar academic content via an unfamiliar language.

The implementation of EMI in Taiwanese medical education is viewed as having both advantages and disadvantages. When it comes to the perceived disadvantages, it would be reasonable for medical students and faculty members in Taiwan to share the sorts of misgivings discussed above. When it comes to the perceived advantages, medicine and health programs taught in English in Taiwanese universities satisfy important educational needs insofar as they facilitate the transfer of knowledge and skills across international borders. After all, students and faculty tend to use English when participating in international conferences, workshops, and courses. The introduction of EMI into medical schools in Taiwan is therefore seen as both promising and challenging. However, the quality of EMI teaching and learning outcomes for Taiwanese medical education is still largely unknown. In order to implement EMI and assess these outcomes, more work needs to be done to address various challenges within the relatively inflexible curriculum of medical education in Taiwan. The remainder of this chapter constitutes a first step toward the completion of this work.

Intended learning outcomes associated with introducing EMI into medical schools

The implementation of EMI programs may affect, and ideally improve, the quality of medical training and knowledge construction when it comes to students' learning outcomes. When EMI courses are introduced into medical schools, students' learning quality and outcomes associated with their professional skills are among the first priorities. English is an essential means of knowledge acquisition and communication for medical students and professionals. In order to acquire the most accurate, up-to-date knowledge, both students and professionals are required to read the most recent literature in their field, which is published in English. English skills are thus important even for students who plan to practice locally. Extensive implementation of EMI courses could therefore improve students' learning quality, especially when they are constructing new knowledge in medical specialties.

Students' learning outcomes after undergoing medical education can be evaluated in terms of two categories: English competence and competence in medical specialties. Each category can be divided into four levels: Foundation, developing, proficient, and expert. Figure 2.1 depicts three possible outcomes regarding students' competence in medical specialties and English after

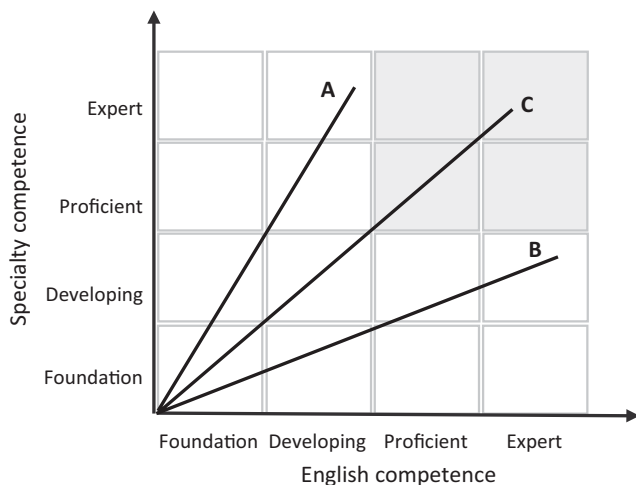


Figure 2.1 Students' competence in medical specialties and English after academic training.

undergoing medical training in a school environment. The horizontal axis in Figure 2.1 represents students' English competence and the vertical axis represents specialty competence.

Line A in this figure indicates that years of medical education have shaped students into experts in their medical specialties, but their English competence remains at the developing level. Although this is a hypothetical situation, it may to some extent reflect reality when students in Taiwan finish their training in medical school. There are several possible reasons for this. First, many English courses in medical schools still focus on general English, which does not satisfy professional requirements. Second, students are often able to satisfy their English course requirements within the first two years of study, and are not required to consistently take additional English courses throughout their undergraduate education. Third, schools may not provide adequate extracurricular resources for students to acquire and develop English skills, for example, workshops, symposiums, and speeches conducted in English. These factors may limit students' development of English ability.

Line B suggests that students have reached expert-level English competence, but their specialty competence remains at the developing level. Large-scale introduction of EMI courses without strategic considerations to avoid sacrificing professional education may result in a situation in which students do not reach the desired level of specialty competence. Improvement of English language proficiency should not occur at the expense of professional studies.

Line C is the ideal result of students' in-school training, as both their professional skills and English competence reach expert levels. Line-C students are not only able to practice medicine in domestic hospitals but are also able to actively participate in the global medical community. Such students are more likely to become successful bilingual experts. They are capable of using their first language to fulfill their duties in the medical context. Moreover, they can leverage their English skills in order to update their knowledge of medical science and technology.

What can higher education policymakers do to make the ideal line-C approach a reality? EMI is often taken to be a strategic approach to facilitate internationalization, and it must be undertaken through strategic measures. Strategic measures are needed because the blunt implementation of a policy of "all English, all the time" is both unrealistic and unwise. The first language should be preserved in some courses because it is the main conduit for medical practitioners to deliver medical content to the community. The first language should play a role in EMI courses as well. Administrators must ensure that English does not create a barrier to students' acquisition of knowledge associated with medical diagnosis and treatment.

In order to achieve line-C development for medical students, school policymakers should work out a feasible strategic plan for implementing EMI that takes into account various constraints, mobilizes various resources, and sets achievable goals. The two biggest constraints are arguably the small number of teachers qualified to teach EMI courses about the medical sciences and the inflexibility of the current medical school curriculum. As for resources, medical students in Taiwan tend to have significantly better English language skills than many of their peers in non-medical programs. Faculty members outside of medical schools who teach EMI courses and/or have advanced degrees from English-speaking countries are another resource. Regarding goals, although the ideal for line-C development is expertise in both specialty knowledge and English competence, it may be more reasonable for medical schools to set the goal of producing medical professionals with expertise in their field and a high level of proficiency (as opposed to expertise) in English. Moreover, policymakers should clearly state that the goal is for students to achieve a high level of proficiency in English as an academic lingua franca as opposed to a native speaker variety of English (Kirkpatrick, 2017). In other words, schools should aim to produce medical professionals who are qualified to use English as a tool for communicating with the global medical community.

A strategic plan for implementing EMI

A feasible strategic plan for implementing EMI in medical schools is one that meets the challenges imposed by various constraints and mobilizes the resources to which medical schools have access, with the goal of achieving line-C development for medical students. The issues here are, of course,

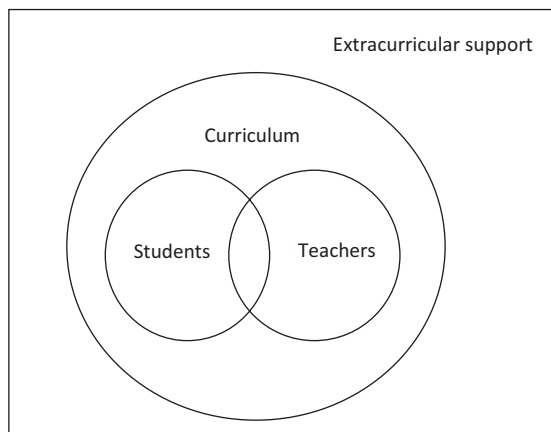


Figure 2.2 Four components in development of EMI courses.

complex, and it is useful for policymakers to consider these issues in terms of four essential components of EMI course development (which are depicted in Figure 2.2): Extracurricular support, curriculum design, students, and teachers. The successful implementation of EMI courses requires answers to the following questions regarding these four components: What are the objectives of the curriculum? What sorts of students will participate in the courses that make up the curriculum? What sorts of teachers will provide instruction for those courses? And what kind of extracurricular support is available? In the course of addressing these questions, policymakers can begin to identify various challenges regarding the implementation of EMI and develop strategic measures to address these challenges.

Extracurricular support

Ideally, EMI courses should take place within the context of a positive environment. A positive environment for learning content via English is an internationalized environment in which both local and international students naturally use English as a communicative interface for networking with each other. Fostering a positive environment is extremely useful for students and faculty engaging in EMI. Three pillars of fostering a positive environment are consulting with stakeholders, allocating EMI resources, and securing an adequate number of qualified EMI teachers. To cultivate a positive environment, schools may consider holding a variety of academic activities such as English speeches, workshops, and forums. These activities help students and faculty to naturally implement English in the university environment. It would also be encouraging to view local students naturally interacting with international students to conduct these activities.

Importantly, international students should not be isolated, because doing so runs contrary to the objectives of university internationalization (Hou et al., 2013). Creating a positive environment for EMI should involve local and international students naturally blending and studying together in the same environment.

Unfortunately, these ideals are difficult to put into practice. Since medical schools aim to prepare students to practice locally in Taiwan, most medical students are local students. International students in medical schools tend to be native Chinese speakers from overseas who intend to practice in Taiwan. Hence, Taiwan's medical schools lack the sort of context that fosters English communication between local and international students. However, many of Taiwan's medical schools are located in universities that have a significant number of international students who are not native speakers of Chinese. These students take courses in English and, more generally, communicate primarily in English, which is often a second language for them. These universities thus have the resources to create a positive EMI context for medical schools, provided that they can offer opportunities for local medical students to blend in and study with international students in other programs. Courses that attract both local and international students may provide the sort of positive environment that is conducive to learning content via English in an internationalized environment.²

Curriculum design

Most medical schools in Taiwan require students to take at least six credit hours of English courses. Most of these required courses are general English courses, either at the fundamental or the advanced level (Table 2.1). Some schools also require medical English courses and offer various EMI courses, for example, courses on critical thinking and cross-cultural perspectives, that can be taken to satisfy English course requirements. While medical schools in Taiwan have settled on a similar set of policies regarding English course requirements, it is debatable whether satisfying these requirements will enable students to attain the level of English competence that they need in order to play a key role in the global medical community.

One challenge that medical schools in Taiwan face is providing an appropriate number of EMI courses for their students. Although many medical schools are engaging in EMI course development, the ideal number of EMI courses for the medical discipline is not obvious. Some courses provide excellent opportunities for students to learn academic content via English. Because the content and terminology of such courses are used universally, they can be considered good choices for EMI courses in medical schools. Some possible courses are shown in Table 2.2. The courses in Table 2.2 have been selected because they are the sorts of courses that are currently offered as part of the curriculum in medical schools in Taiwan, and because they are courses that benefit medical students regardless of their specialization and program

Table 2.1 Students' entry level scores on the General Scholastic Ability Test (GSAT) and mandatory English courses and credit hours

<i>University</i>	<i>GSAT entry level</i>	<i>Mandatory credit hours</i>	<i>Mandatory courses</i>
NU1	7%	6	Fundamental English I and II Advanced English I and II
NU2	7%	6	Fundamental English I and II Advanced English
NU3	7%	4	General English I and II
NU4	7%	6	General English Applying English Medical purpose English Advanced English
PU1	7%	6	Fundamental English I and II Conversational English English reading
PU2	7%	8	General English I and II Advanced English English listening and speaking
PU3	7%	6	Medical English Fundamental English I and II English writing
PU4	7%	6	General English Listening and speaking English
PU5	7%	6	English I and II Reading and writing English
PU6	7%	6	Listening and speaking English Reading English
PU7	7%	6	Fundamental English Advanced English
PU8	7%	4	Fundamental English, Speaking English, English writing

Note: Medical schools located within national universities are coded NU1, NU2, and so on. Medical schools located within private universities or colleges are coded PU1, PU2, and so on.

Table 2.2 Recommended EMI courses in medical education

<i>Liberal arts</i>	<i>Basic training</i>	<i>Specialized training</i>
- Philosophy	- Computer programming	- Healthcare policy
- Ethics	- Medical ethics	- Law and medicine
- History	- Public health	- Translational medicine
- Economics	- Biostatistics	- Evidence-based medicine
- Science and technology	- Information technology and medicine	- Environmental health

Note: These courses include both general education courses (e.g., Philosophy) and core medical education courses (e.g., Public health).

of study. These courses are therefore a natural starting point when it comes to medical schools engaging in EMI course development.

Policymakers should select courses that can potentially be developed into EMI courses without negatively impacting the way in which the medical school curriculum is currently structured in Taiwan. This selection ought to be based on two essential principles: (1) EMI course development should not result in significant changes to the current curriculum structure, and (2) EMI courses should primarily aim to use English as a tool for professional development. In other words, EMI courses should be inserted into the current curriculum in a way that ensures the integrity of the entire curriculum.

Medical schools should ensure that students have the English language skills that they need in order to thrive in EMI courses, and offer a sufficient number of EMI courses every semester so that students can take such courses at every stage of their education. Courses that focus primarily on improving language skills (EAP and ESP courses) should be offered alongside EMI courses in order to equip students with the language skills that they will need for their EMI courses. EMI courses offered in the first two years of study should be introductory-level courses that focus primarily on satisfying general education requirements. By the time students reach their third year of study, they will already be familiar with EMI and will be prepared for the more advanced EMI courses that provide the foundation of their medical education in the third and fourth years of study. These more advanced EMI courses will, in turn, prepare students for their fifth and sixth years of study, in which they will acquire more specialized, cutting-edge knowledge of their fields of study. These three levels of EMI courses are summarized in Table 2.3.

There is also the issue of whether EMI policy should require courses that are taught entirely in English, or whether there is a place for other languages in the teaching of EMI courses. In multilingual settings, teaching and learning are facilitated by the use of different languages, and it can therefore be beneficial to incorporate other languages within EMI courses (Chin and Li, Chapter 1; Kirkpatrick, 2017). In Taiwan in particular, a brief Chinese-language explanation of a difficult concept can equip students with

Table 2.3 Three levels of EMI courses

<i>Study year</i>	<i>Area to embed EMI courses</i>	<i>EMI course aims</i>	<i>Examples of courses</i>
Undergraduate years 1 and 2	Liberal arts	General education requirements	History, Philosophy, Economics
Undergraduate years 3 and 4	Science	Medical school core requirements	Biostatistics, Healthcare policy, Medical ethics
Undergraduate years 5 and 6	Clinical study	Medical research and applications	Research seminars

the knowledge required to succeed in English-language classroom activities and assignments. There may also be a place for the use of Chinese in small group discussions among students, which can prepare the way for large-group discussions in English. And it would be reasonable for lower-level EMI courses (i.e., EMI courses in the first two years of study) to provide more Chinese-language support. Moreover, it is important to emphasize, especially within the context of courses in medical ethics and applied communication skills in medical clinics, that the first language should be prioritized as much as possible when communicating with patients in the community. However, doing so may not always be possible given the linguistic diversity in Taiwan, where the first language may be Mandarin Chinese, Hokkien, Hakka, or one of a number of different indigenous languages. That said, English is rarely a first language. Teachers should therefore carefully consider whether a particular course is a good candidate for an EMI course, and also how to develop that course so that students can achieve the course objectives.

Students

Admission requirements vary among medical schools, but all are fairly stringent, and students admitted to medical schools tend to have better English language skills than many of their peers in non-medical programs. Universities assess an applicant's knowledge and competencies in terms of the General Scholastic Ability Test (GSAT), which is the university entrance exam in Taiwan. The GSAT includes a section that tests English language skills, and medical students' English scores are within the top 7% of test takers (Table 2.1). As a result, medical students are competitive regarding their academic performance in English.

Medical schools set various criteria, based on standardized English tests, for the level of English competence that students should attain before graduation (Table 2.4). Students who demonstrate, via test scores, that they have satisfied the criteria are not required to take fundamental English courses. However, no students are required to take any of these standardized tests before graduation, and in practice, students' only English language requirement for graduation is the successful completion of a set number of English courses. In general, graduating students' English proficiency is not assessed in terms of any of the standardized English tests before graduation.

As a result, medical schools are faced with the following situation. The admission requirements ensure that admitted students possess English language skills that are significantly better than many of their peers in non-medical programs. However, these are skills that can be lost over time, especially if students lack adequate opportunities to practice and improve these skills. As it stands, there is a serious risk that students will regress after taking the mandatory six credit hours of general English courses that are required for graduation. It is therefore possible that some graduating students have not attained the level of English competence specified in the criteria for

Table 2.4 Criteria for students' English competence before graduation

University	TOEFL			IELTS	GEPT	TOEIC	Cambridge English Qualifications	BULATS
	ITP	CBT	IBT					
NU1			100	7	High- Intermediate		FCE	
NU2	550		79	6		750		
NU3			83	6.5		860	FCE	75
NU4	550		80	6		850		
PU1			92	6.5	High- Intermediate	850		
PU2	543		87	5.5			FCE, CAE, CPE	ALTE level 3
PU3	500		61	5	High- Intermediate	600		
PU4	530	197	71	5.0	High- Intermediate	665	FCE	
PU5	500	173	61	5	High- Intermediate	600		
PU6	565	227	87	6	High- Intermediate	800	FCE	ALTE level 3
PU7					High- Intermediate			
PU8	457	137	57	4	High- Intermediate	550		ALTE level 3

Note: Medical schools located within national universities are coded NU1, NU2, and so on. Medical schools located within private universities or colleges are coded PU1, PU2, and so on.

graduating. Moreover, because students are only evaluated in terms of their general English skills, these measures may not reliably predict their level of ability in medical English communication and learning.

English courses should therefore be provided for students at different levels, and students should be encouraged to take at least one EMI course every semester in their program, so as to achieve consistent, incremental improvement that contributes to more effective learning. If medical students continuously take at least one EMI course per semester throughout their education, they will have an opportunity to maintain and build upon the strong foundation of English skills that they have when they are admitted to medical school. Table 2.3 provides information regarding EMI courses that focus on different subjects, that require different levels of English proficiency from students, and that can be offered at different stages of medical school education. While there are genuine concerns regarding students' ability to achieve intended learning outcomes in EMI courses, it may be possible to address these concerns by implementing the kind of sequence of courses presented in Table 2.3. After all, the aim of this sequence of courses is to make sure that lower-level EMI courses provide the foundation that students need in order to thrive in higher-level EMI courses.

Teachers

Undoubtedly, the quality of teaching and learning depends on the teacher. In general, teachers of EMI courses need to provide an environment in which students can construct knowledge and become active participants in the learning process. The teacher's mandate involves preparing detailed guidelines, organizing groups, helping students to select topics, guiding their research, helping them design effective presentations and use visual aids, providing feedback on writing assignments and exams, and evaluating the teaching process and revising it where appropriate. Teachers must also create opportunities for students to interact with them and with other learners. Teachers should serve as mediators who coach and encourage students to formulate their own understanding of the material.

This view of the teacher's mandate differs substantially from the view that teachers are knowledge dispensers, which is to some extent still present in higher education in Taiwan. Fenton-Smith et al. (2017) observe that much of the EMI-related research regarding Taiwan is premised on the idea that the teacher's primary activity is to deliver knowledge to students via monologic lectures. Indeed, in some EMI courses, students primarily listen to English lectures and read English textbooks, and have few opportunities to speak or write in English (Chang, 2010). However, it is not clear that the view that teachers are knowledge dispensers is the default view in Taiwanese higher education today. There are EMI teachers in Taiwan who reject this view and instead facilitate learning in a more interactive way that makes use of small-group work, presentations, and dialogue between students and teachers

(Fenton-Smith et al., 2017). Hence, there is some reason to be optimistic that EMI teachers in Taiwan will embrace the view that teachers are mediators or coaches who facilitate learning as opposed to knowledge dispensers who only deliver monologic lectures.

To offer high-quality EMI courses in medical schools, teachers must be capable of both instructing students about medical knowledge and delivering it in English. The teachers who are most qualified to teach EMI courses in medical schools are therefore teachers who specialize in medical science or related sciences and have a high level of English language proficiency. Since the goal is to produce medical professionals who have expertise in their field and a high level of proficiency using English as a lingua franca to communicate with the global medical community, qualified EMI teachers should attain at least this level of English proficiency. Conversely, it is not necessary for EMI teachers to be native or near-native speakers of English. In short, teachers must be able to use English to effectively communicate medical information to students. To ensure their students' learning quality, EMI teachers should also be familiar with teaching skills and classroom management.

However, qualified teachers who are highly skilled in both English and medical specialties are difficult to find, and it is difficult to assess how many faculty members in Taiwan's medical schools possess the level of English competence required for teaching an effective EMI course. One possible indicator of the required level of English competence is graduate-level training (i.e., a master's or doctorate degree) from a university in an English-speaking country (e.g., the United Kingdom or the United States). Based on information collected from the websites of medical schools in Taiwan, faculty members who have either a master's degree or doctorate from an English-speaking country, on average, account for less than 10% of the faculty (Table 2.5). It is important to admit that having such a degree is neither a necessary nor a sufficient condition for the ability to teach an EMI course effectively. That said, the data presented in Table 2.5 do suggest that qualified teachers who are highly skilled in both English and medical specialties may be difficult to find in Taiwan.

One possible solution to this shortage of qualified EMI teachers is to offer courses that are co-taught by a medical professional and an English expert. By collaborating closely with one another, instructors can offer students an excellent opportunity to learn medical knowledge and improve their English language proficiency. Moreover, co-taught courses offer instructors an excellent opportunity to learn from each other. However, this solution may be more or less appropriate given the content of the course. For example, it may work better in a course on medical writing than it would in a course on biostatistics.

Another possible solution to this shortage is to offer more opportunities for professional development of EMI teachers. Indeed, there is a consensus in the literature on EMI in Taiwan that more opportunities for professional development are needed (Chang, 2010; Fenton-Smith et al., 2017; Hou et al., 2013; Huang, 2012). With enough opportunities and encouragement to undergo

Table 2.5 Estimation of qualified EMI teachers in medical schools in Taiwan

<i>University</i>	<i>% (MIN)</i>
NU1	Not available
NU2	16.1% (16/99)
NU3	Not available
NU4	4.2% (5/118)
PU1	3.7% (14/370)
PU2	7.6% (9/118)
PU3	17.8% (27/151)
PU4	Not available
PU5	7.6% (11/144)
PU6	10.6% (10/94)
PU7	6.2% (9/143)
PU8	12.8% (10/78)

Note: *M* represents the number of faculty members in the department of medicine who were awarded degrees from English-speaking countries. *N* represents the total number of faculty members in the department of medicine. Medical schools located within national universities are coded NU1, NU2, and so on. Medical schools located within private universities or colleges are coded PU1, PU2, and so on. These data were collected from the official websites of the medical schools, which were accessed in April 2020.

professional development, a medical specialist with sufficient English language proficiency can become an effective EMI teacher.

A third possible solution to this shortage is for medical school policymakers to work with faculty outside of the medical school in order to implement EMI courses within the medical school curriculum. Most medical schools in Taiwan are located in comprehensive universities that have faculty members in other programs who teach EMI courses and/or have advanced degrees from English-speaking countries. Policymakers should include some of these faculty members on a task force for developing EMI courses for the medical school curriculum. Although these faculty members may lack medical expertise, they are still an important resource. Many of these faculty members are experts in fields such as biostatistics, computer programming, data science, and academic reading and writing. Courses in these areas provide the foundation for the specialized medical training that medical students receive at the more advanced stages of their education. Selection of such courses for EMI course development provides at least two advantages. First, students' learning is synchronized with global developments since the content and terminology is mainly transmitted via English. Non-EMI courses in the same areas may rely on (possibly inaccurate) translations of (possibly outdated) textbooks, in which case they are out of step with global developments. Second, these courses do not involve specialized medical knowledge and do not require instructors who have such knowledge. Hence, any negative impact to the current curriculum is to some extent minimized.

Support for EMI: English for academic reading, presentations, and writing

In the course of implementing EMI programs in medical schools, policymakers should take steps to ensure that students are sufficiently prepared for EMI courses. It is often the case that EMI programs are implemented without paying sufficient attention to whether students have the level of English proficiency that will allow them to thrive in EMI courses (Chin & Li, Chapter 1). Although medical schools typically require students to take general English courses at the fundamental and advanced levels, it is not clear whether these courses, on their own, are sufficient to provide students with the language skills they need for EMI courses. EMI courses should therefore be implemented alongside EAP and ESP courses that focus on teaching the English reading, writing, and presentation skills that will enable students to succeed in their EMI courses.

English for academic reading

The ability to read scientific reference materials in the original English is a core competence for medical specialists. Many university students in Taiwan are tempted to read English language scientific reference materials that have been translated into Chinese (Chang, 2010). This not only hampers students' development of English reading comprehension, it also adversely affects their development as medical specialists. Students may have especially poor learning outcomes if they use outdated textbooks in translation instead of newer English textbooks that contain updated scientific and technological knowledge.

In Taiwan, students have few opportunities to experience environments where English is the main language. However, reading English texts is a good opportunity for students to engage themselves in an English language context. Acquiring scientific knowledge by reading original English texts provides students with several advantages. First, it helps them build up their professional vocabulary. Second, it provides them with an understanding of how to apply this vocabulary. Third, it serves as an opportunity for them to develop their overall use of English in the realm of science and technology.

In addition to English reading skills, students must also be equipped with critical thinking skills. Being an active reader by asking questions and discerning the argument and logic of a text is essential in the development of critical thinking (Cullen et al., 2018).

Designing EAP and ESP courses in reading for academic and medical purposes will help students develop reading competence. These courses can be developed with four aspects in mind: Word comprehension, article comprehension, critical thinking, and summarizing ability. These courses are particularly helpful for first- and second-year medical school students, since they lay the foundation for further EMI studies in medical science.

English for academic presentations

Today's rapid development of medical science and technology has caused scientists to largely adopt English for oral presentations so as to communicate with global peers at international conferences, workshops, symposiums, and meetings. Thus, to foster global talents in the coming years, administrators in higher education may consider implementing EAP and ESP courses devoted to teaching academic presentation skills.

By delivering academic presentations, students thereby improve both their knowledge and presentation skills. This process contains at least seven stages of learning for students. First, students must choose the topic they will research for their presentation. The second stage is document collection. Students must search for relevant articles through libraries and/or the Internet. The third stage is review and analysis. Students must read the collected articles critically and extract valuable information. Fourth, students must form arguments based on their personal knowledge and judgment. Fifth, when engaging in presentation design, they must outline concepts in a logical sequence and ultimately develop an effective means of communicating with other learners and teachers. Sixth, during their oral presentations, students must deliver their ideas, thoughts, knowledge, and beliefs in English to the audience. Seventh, after finishing their oral presentations, students must respond to the questions raised by the audience.

Students experiencing this learning process face many challenges in applying an English language mindset to transform their acquired knowledge and ultimately deliver an original argument in a formal setting. Although this is a very difficult task, it offers students a valuable opportunity for in-depth learning of how to use English as a means to acquire scientific knowledge and articulate an argument.

English for academic writing

New information is constantly emerging in the field of medicine by way of an ever-increasing number of research studies. This knowledge needs to be effectively communicated to different audiences, namely: Physicians, healthcare professionals, patients, and consumers.

Medical writing is a vital means of communicating scientific information. It includes the writing of documents such as disease- or drug-related educational and promotional literature, journal articles, healthcare websites, health-related magazines, and news articles (Sharma, 2010). As Sharma (2010) puts it, "The scientific information in these documents needs to be presented to suit the level of understanding of the target audience. ... The medical writer needs to have a clear understanding of the medical concepts and ideas, and be able to present the data and its interpretation in the way the target audience will understand." Scientific writing stresses communicative efficiency, so writers are encouraged to use plain English to deliver scientific information

to their audience in a clear, concise, and accurate manner. Medical writing is a crucial competence for medical students prior to entering the medicine and healthcare sector.

Arguably, many students are still at the developing level of English medical writing before graduation, though data are needed to substantiate this claim. A number of reasons could explain the lack of proficiency of some students at this stage of their education. First, medical writing courses are not widely available in medical schools. Second, students may not be used to conveying their ideas and knowledge through English writing. Third, students may be incapable of using their critical writing skills to communicate medical science topics to their target audiences.

Critical writing is a process that involves using a range of writing skills to present an effective argument. This approach helps students to present their reasoning and evidence in a clear, well-structured manner in various formats (e.g., essays, reports, project proposals, and dissertations). Moreover, prior to engaging in critical writing, students must complete several necessary tasks to develop an informed argument. They must examine data from different angles, check the accuracy of information and the logic of their argument, confirm statistics and other empirical data, identify undeclared assumptions, and finally reach informed conclusions. These steps constitute a good approach for training students to engage in writing and helping them to develop critical thinking skills. Improving the quality of writing involves improving the quality of thought. Therefore, medical writing offers an excellent training opportunity for students to practice their critical thinking skills.

In order to understand how best to improve writing, a better understanding of how to read scientific articles is required. As Gopen and Swan (1990) put it, "Readers do not simply read; they interpret. Any piece of prose, no matter how short, may 'mean' in 10 (or more) different ways to 10 different readers." Therefore, writing with the reader in mind is the primary consideration. Consequently, it may be productive to teach academic reading skills alongside academic writing skills.

School administrators may consider establishing or further developing writing centers on campus to help students overcome barriers to English writing. They may also consider offering workshops or conferences to refine or improve faculty members' teaching skills in courses on medical writing.

Conclusion

While there are a number of difficult challenges associated with the implementation of EMI in Taiwanese medical schools, these challenges are not insurmountable. It is true that the medical school curriculum in Taiwan is relatively inflexible. But there is still room to implement EMI in a way that does not disrupt the existing curriculum. Medical schools should identify existing courses that are good candidates for EMI courses, and work on developing those courses. It is also true that it would be unwise to develop

students' English language proficiency at the expense of their medical specialization. However, EMI need not be in conflict with the development of professional knowledge and skills, especially if English is viewed primarily as a tool for professional development. Another concern is that students lack the level of English proficiency necessary to succeed in EMI courses. While this is a real concern, it can be addressed by allowing a role for the Chinese language in EMI courses and by implementing EMI courses alongside EAP and ESP courses that teach the language skills that students need for their EMI courses. Although it may be difficult to find teachers who are qualified to teach EMI courses on medical science, there are ways to address this difficulty as well. Possible solutions include developing courses that are co-taught by a medical expert and a language expert, providing professional development for EMI teachers, and collaborating with qualified EMI teachers outside of medical schools who can teach EMI courses in the liberal arts and sciences. Hence, there is still room for EMI to play an important role in medical education in Taiwan. By consistently offering EMI courses every semester, medical schools can produce bilingual experts who can use their language skills not only to ensure that their knowledge of medical science and technology is up-to-date, but also to actively engage with the global medical community.

Notes

- 1 This chapter provides data regarding 12 of these medical schools. The medical school at I-Shou University began accepting students in 2019, and data regarding this school is not yet readily available on the school's website.
- 2 See Tables 2.2 and 2.3 for some examples of courses that may attract both local and international students.

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3 EMI for information engineering students

A case study

Sally Chen and Shou-De Lin

Introduction

The use of foreign or second languages as a medium of instruction has become widespread in the past decade. The adoption of English-medium instruction (EMI), in particular, reflects the drastic expansion of this global language into education.

Modern EMI is usually traced back to Content and Language Integrated Learning (CLIL), but in fact, the definition of EMI goes beyond that of CLIL (Tu & Burns, 2014). CLIL originally targeted the middle school level, with language treated as part of the course. Thus, CLIL teachers were responsible for the delivery of both content knowledge and language competence. EMI, on the other hand, uses English language as a *tool* for acquiring knowledge of a certain discipline, and has been adopted in all levels of education (Dearden, 2014).

The switch to the use of EMI also reflects a change in the approach of language teaching in higher education. Regarding this, EMI should not be confused with English for Specific Purposes (ESP) or English for Academic Purposes (EAP). EAP differs from ESP in that it aims to help students learn those aspects of English that are necessary for future study or work in English medium higher education. Teachers of ESP programs are mainly responsible for teaching the English language, while the content of their teaching materials is related to one certain discipline. For example, ESP in engineering education focuses on teaching the terminology and communication skills required for the engineering field (Cheremissina & Riemer, 2001). Thus, the two should be differentiated from EMI, in which there is an expected connection between the English language itself and high levels of knowledge in a particular academic field (Shohamy, 2012).

Recently, Hüttner (2019) has proposed the new term “disciplinary language,” to better capture the concept of EMI. The term refers to accessing disciplinary knowledge through the English language, and the learning of this subject-specific language is accomplished via the process of active and repetitive practice (p. 10). In this way, EMI can further be distinguished from ESP

in that it not only includes the training of general English skills for students of a specific field, but facilitates their use of English as a *tool* in order to obtain expertise in a particular field.

EMI has been growing globally in all stages of education (Dearden, 2014), driven by economic, social, political, and educational forces. Specifically, “English-medium instruction has become commonplace in many institutes of higher education in countries where English is not the native language” (Wilkinson, 2013, p. 3). For example, following a similar growth pattern to that seen in Europe, sharp rises in the use of EMI have been observed in higher education in Middle Eastern and Asian countries (Macaro et al., 2018).

Given that globalization is an irreversible trend, EMI has been adopted by various professional fields, including engineering. In one study applying EMI in engineering, faculty members of the engineering departments in Turkish universities agreed that EMI allows students to make better use of their expertise due to constant contact with resources provided in English. However, these lecturers also admitted that their students were not proficient enough to learn subject matter in this global language. Thus, the idea of lecturing in Turkish, the students’ first language (L1), was believed to be an alternative, providing the students with a clearer understanding of the course content (Basibek et al., 2014). In another study, three major engineering universities in Korea were chosen to examine students’ perceptions of EMI and L1 use in EMI classes. A questionnaire-based survey was conducted among undergraduate students of the universities, and the results showed that students in general felt that their English ability was insufficient. The majority of the students preferred Korean-medium instruction over EMI, and did not find EMI improved their English ability. (Kim et al., 2017). The fact that engineering students in Korea were not proficient enough in English was supported by another questionnaire-based study, which looked at professors from various departments in a Korean engineering school. Moreover, it was not only the students but also the professors themselves who were in need of intensive language training to provide adequate EMI courses (Kim, 2014).

In Taiwan, a survey investigating 157 students at a university of science and technology showed that while local students were motivated by the potential benefit of EMI on their English ability, their major learning anxiety came from self-evaluated low English proficiency. In the same study, some participants suggested, in the interview following the survey, that instructors use Chinese translation to assist in EMI course teaching (Huang, 2015).

In a recent study on Korean engineering professors, most professors recognized the dual problems of students’ insufficient English proficiency, and lack of English lecturing skills among Korean national faculty members in leading EMI classes (Kim et al., 2017). It is likely that this lack of training contributes to the current situation in which, despite the majority of university professors speaking English, some are unable to deliver courses effectively in English. (Dearden, 2014).

To respond to this, two pedagogical strategies, team teaching (Doiz et al., 2012) and translanguaging (García, 2009; García & Li, 2014), have been introduced so as to tackle the language issues, whether they result from an imbalance in the English proficiency level of the students or from a lack of experience in lecturing in English on the part of the content teachers. As already mentioned, in EMI, English is considered a *tool* to help students acquire the expertise of a given discipline. To lessen the burden of the content teacher, it is possible to form a cooperative work unit with a language teacher (Lasagabaster, 2018), thus shifting the responsibility for instruction from the individual to the team. The language issues can be further tackled by incorporating the concept of translanguaging into EMI pedagogy. Originating from Welsh, the term *translanguaging* is increasingly used in bilingual education to refer to the process by which teachers and students engage in “multiple discursive practices...in order to make sense of their bilingual worlds” (García, 2009, p. 45). With its distinctive conception of the heteroglossic and dynamic nature of bilingualism, translanguaging echoes the viewpoint expressed by many EMI researchers that for EMI instruction in an English as a foreign language context, L1 and English can be used alternately to serve different pedagogical functions. For example, a study on the local and international students’ feedback on the EMI classes at two second-tier private universities in Japan showed that use of Japanese (L1) in class, either by way of translated documents or concise explanations, better facilitated class activities for the local students (Chapple, 2015).

EMI is relatively new to higher education in Taiwan, as the development of EMI at universities has been observed in the Asia-Pacific region only over the past two decades (Chin & Li, Chapter 1). The idea was first realized in the region during the early 2000s when a small number of elite public universities started to offer business degrees taught in English, such as global or international MBA programs. More and more EMI courses have appeared since then. For instance, during the 2005–2006 academic year, there were 420 EMI courses offered by a top ranking public university in northern Taiwan (Wu, 2006). However, exactly how EMI is implemented in the engineering field in Taiwan remains unexamined. In this chapter, the structure and the design of a real case will be reported.

Different from most Asian countries, in which EMI policies have been enacted by their governments, in the beginning, the implementation of EMI in Taiwan appeared to be more voluntary, that is, “without having any policy imposed on them by the education bureaus” (Yang, 2015). Given that there were no fixed rules for implementation back then, universities in Taiwan used various ways to encourage their faculty members to offer more EMI courses, as English-medium classes require much more time for preparation and professors were reluctant to take on the extra burden unprompted. For instance, one university offered 50% extra credit hours as a financial incentive for its faculty members to offer EMI classes (Wu, 2006).

Recently, sponsorship has been offered by the Ministry of Education in Taiwan to encourage EMI in higher education. For example, faculty development programs geared toward EMI started in 2010 with three different regional resource centers established (Tsui, 2017). Practice-wise, all lecturers of EMI courses are allowed to have a teaching assistant to help out by managing the class, or assisting the students to understand the course content (Dearden, 2014), as in the case introduced in this chapter. In addition, full-time professors in the Department of Computer Science and Information Engineering (CSIE) of the university may choose to teach either three courses in Mandarin or two EMI courses to fulfil the teaching hours required for each semester. Even given these incentives, however, instructors in general still feel reluctant to offer EMI courses, one of the main reasons for which remains an inability to teach EMI courses effectively and with ease. It seems that not only students but also professors worry that their insufficient English proficiency may impede their experience with EMI.

The challenges of EMI are believed to reside in the mismatch between expected goals and actual implementation, which has been commonly acknowledged in the practices of Asian countries, for instance, as in tertiary education in Vietnam (Tu & Burns, 2014). The macro level of the challenges, such as the social or political impacts, are not the main concern of this chapter; the EMI implementation in the area of information science will mainly be introduced at the micro level, which includes the classroom and the individual (Tsui & Tollefson, 2004). Language issues, as mentioned already, will also be included in the discussion as a response to the choice of language medium in previous findings from EMI implementations in the engineering field, such as Basibek et al. (2014) and Dearden (2014). Specifically, in this chapter, the motivation and the design of a research methods and technical writing course for students of information engineering will be described. Discussion will focus on the integration between the main parts of the course content, as well as how the decision on which language to use is made in different areas of this course.

Departmental EMI practices as per the university policy

As mentioned already, EMI is a modern global trend in education, and Taiwan is no exception. The policy chosen by the Department of Computer Science and Information Engineering (CSIE) of the “highly prestigious academic institution in Taiwan” (Wu, 2006, p. 69), which will be introduced shortly, is indicative of EMI implementation in the field of information engineering.

The university’s stated policy of internationalization has brought in more students from overseas. Thus, faculty members are encouraged by the department office to offer EMI courses. In this department, full-time CSIE professors have two alternatives: Each semester, they can teach either three courses in Mandarin, or two in English. In addition, the department offers

each EMI course one teaching assistant to facilitate the progression of the course.

The seemingly lighter teaching load can be a double-edged sword for the faculty, though. Alleviation of the teaching load through offering EMI courses may be tempting, but in fact, few professors choose to take the offer. According to a professor from this department, only about 10 to 15% of the courses provided by the department are instructed in English. A main concern of the full-time faculty members is that most of them are not native speakers of English, and the same situation has also been encountered in EMI implementation in Korea (Kim, 2014). Specifically, teachers fear that their pronunciation or grammatical use of this foreign language might not be authentic, which may result in difficulties for students to fully understand the course content. This in turn, may lead to low scores in the end-of-semester student evaluation and eventually be detrimental to faculty members' promotion evaluations. For learners, the wide range of English proficiency levels among students presents another potential problem for EMI implementation. Some of the students may not be able to express themselves clearly in class, and the back-and-forth double checking between their actual language use and intentional meaning could waste time and energy.

A similar phenomenon has been observed in South Korea. As "the Korean government has been aggressively pursuing the internationalization of its universities" (Kim, 2014, p. 2), language has remained an issue to overcome for successful EMI implementations. This is partly because, compared with students in other fields such as humanities and social sciences, engineering students in general have lower English abilities, as shown via test scores or self-evaluation (Kim, 2014). Professors in the engineering field in Korea also felt that the students they taught had insufficient language skills for EMI implementation (Kang & Park, 2004). Based on the professors' observations, over 40% of undergraduates and about 28% of graduate students did not have sufficient English abilities to join the EMI courses; however, the universities have not taken any corresponding steps to help the students (Kim, 2014).

In the department under discussion, the undergraduate students, like those in all the other departments of the same university, have to fulfill the English proficiency requirement before graduation. They have to pass the high-intermediate level of the reading and the listening tests of the General English Proficiency Test (GEPT), which is equivalent to CEFR B2 level. For graduate students, however, there are no specific requirements for English proficiency, either from the university or from the department.

Under these circumstances, in order to meet the keen need of international exchange in academia nowadays, almost all professors in the CSIE department impose regulations on their advisees: In most laboratories, graduate students have to attend weekly group meetings, and the slides of their progress reports must be written in English, whereas the oral reports can be, and usually are, in Mandarin. In addition, students need to write their theses or dissertations in English. The effects of this are twofold. It is good training

for English technical writing; moreover, it serves as a base for rewriting for future submissions to international conferences or journals after the students' graduation.

TWRM: Historical development

Technical Writing and Research Methods (TWRM) is a selective course jointly offered by the Department of CSIE and another graduate institute at the university related to networking and multimedia. Since TWRM is listed under the College of Electrical Engineering and Computer Science on the course website of the university, most of the students who have enrolled on the course are from this college. Specifically, students of previous TWRM classes were mainly from the Department of CSIE and the Department of Electrical Engineering, which constituted 70% and 30% of the total numbers, respectively.

The first TWRM class appeared in 2007, right after the professor who created the course started his career as an assistant professor at this university, and the course has been held regularly on a yearly basis ever since. The structure of the course has undergone a ten-year transformation process.

In the beginning, after observing the difficulty of the graduate students in writing up their work in English, the professor assumed that it must be a language problem—specifically, the students were not proficient enough in this foreign language to master technical writing. Therefore, the focus of the very first TWRM class aimed to improve students' English ability. However, at the end of the semester the professor realized that this was not the case: Though students did become more familiar with the vocabulary, grammar, and conventions of academic English, they were still unable to fluently express their thoughts in academic writing.

The focus was accordingly switched to writing skills when the course was held for the second time, yet the results were still not satisfactory. After several rounds of revision based on the students' feedback and the professor's reflections, the course frame has finally evolved into the current version.

Listed as one of the courses within the remit of the Professional English Writing for Academic Purposes offered by the Academic Writing Education Center (AWEC) of the university, the TWRM is provided with a trained instructor from the writing center. Aiming to equip the graduate students of the College of Electronic Engineering and Computer Science with the adequate knowledge and necessary skills to undertake their research, the concept of "team teaching" is applied to the course design of the current TWRM, as previous studies have shown that collaboration between the content and language experts facilitates the efficiency of EMI (Doiz et al., 2012).

Under the current semester system (two semesters for an academic year), the TWRM course lasts for eighteen weeks. The course comprises two main parts: research methods and technical writing. As it aims to impart the requisite skills to conduct research in the field of information science, the

research method segment is taught by a professor from the Department of CSIE (the content instructor). Aiming to provide students with the ability to write up their own research findings, the technical writing segment is taught by a trained lecturer from the AWEC of the university (the language instructor).

Design of TWRM

Three features characterize the TWRM course. First, the schedule follows the procedure of conducting a research project; second, the implementation of the course serves as a perfect example of team teaching (Doiz et al., 2012), and third, translanguaging pedagogy (García & Li, 2014) is effectively implemented. Each of these features will be discussed separately below.

Sequencing of the core course components

In the first class, the aims of the course are explained to the students, which include providing them with strategies to conduct quality research in the fields of information or electronic engineering and the skills to explain their findings. To achieve these goals, the students must first familiarize themselves with previous research findings and state-of-the-art knowledge of their fields via extensive reading, before selecting a topic for their research projects.

During the semester, about two thirds of the lectures are given by the content instructor and one third by the language instructor. The former mainly covers lectures on research-related issues, and the latter introduces students to the principles of academic writing and to hands-on strategies for writing technical papers. Both instructors prepare the course materials and visual aids in English, but deliver the lectures in Mandarin.

The schedule of the class basically follows the procedure of conducting a research project: Students first have to pick a research topic of a scale suitable for completion within one semester. Reminders and a detailed description of the execution of the research projects are all included, such as how experiments or surveys should be designed and conducted, as well as the subsequent evaluations and analyses. Alongside the lectures, students are required to give oral presentations or hand in writing assignments in accordance with the schedule.

It is in the very first class that the content instructor shares with the students the three key points that determine whether a submitted manuscript will be accepted for publication: research quality, writing skills, and language proficiency. The students are notified that only the former two are covered in the class since TWRM in itself is “not a language course.”

Teamwork in TWRM

As has been discussed already, language proficiency plays a crucial role in determining the efficacy of EMI courses. According to the content instructor,

students are responsible for catching up if their English proficiency is below par. Information about relevant resources on campus are also provided by the language instructor in the class for those who would like to strengthen their language skills outside the class. For instance, students may either take English courses held by the Language Center of the university (belonging to the College of Liberal Arts) or apply for free tutoring sessions from the Academic Writing Education Center on campus.

Despite the explicit disclaimer, the imbalance in English proficiency levels among students was a problem in previous TWRM courses, as no language screening mechanism had been set up for graduate students in the university, and students naturally varied in their English listening, speaking, reading, and writing skills. In order to solve this language issue, two strategies have been adopted, team teaching (Doiz et al., 2012) and translanguaging pedagogy (García & Li, 2014).

As mentioned in a recent study, although EMI at the university level has become popular globally, research on integrating pedagogical guidelines to effectively implement an EMI course has been scarce. Some EMI teachers tend to avoid the language aspect, as if it were a weakness, but in fact, this can be solved by the concept of team teaching, the collaboration between language and content teachers (Lasagabaster, 2018). Specifically, in team teaching, the role of instruction shifts from an individual to a team, which also provides students with the opportunity to take a more active role in learning (Buckley, 1999). As team teaching is a field where more research remains to be done, in the following, the implementation details of the TWRM course will be described in order to share actual experience of interdisciplinary collaboration between a content field and the language realm.

In terms of the format of instruction, both lectures and discussion sessions are included in this course. General strategies for research methods, as well as oral presentation and technical writing skills are first introduced via lectures. The content instructor and the language instructor both use visual aids (mainly in the form of PowerPoint slides) to introduce the guidelines and information related to each topic, and there are accompanying in-class activities to help the students familiarize themselves with the concepts they have just learned. Topics of the lectures belong to three main categories: introduction to research ethics, techniques for conducting a research project, and practical skills such as tips in preparing slides for oral presentation and reminders for replying to reviewers' comments.

The lecture-driven format of instruction has in fact made the TWRM classes highly interactive. Students are encouraged to ask questions during the lectures. There is also a question-and-answer session after each lecture. Moreover, discussion sessions are included after each oral presentation session or in-class review of the writing assignments. Both the question-and-answer and the discussion sessions are in Mandarin. Quality of research and writing skills, rather than language details, are of the main concern in these discussions.

Research methods

As already mentioned, the first half of the course focused on research methods, aiming for helping the students who have just begun their research career to establish the groundwork of their academic pursuit in the fields of information and electrical engineering. Topics such as research ethics and research methods, standard procedures and guidelines of conducting research in these fields were included, so were the details about experimental design and data analysis. The content instructor was responsible for the preparation of the class slides on these topics, and the language instructor helped him proofread the language use.

Training in research methods starts with a general introduction to the subfields and their state-of-the-art findings. Students then experience the entire research process compressed into the time frame of one semester, starting from topic selection and literature review, followed by methodology design and experiment execution, and culminating in paper writing.

For hands-on practice of research methods, the students are required to give individual oral presentations on topic selection, literature review, methods, and the experimental results of their individual projects, respectively. Each presentation usually lasts for six to eight minutes, depending on the size of the class that year. During the presentations, fellow students can give on-the-spot feedback or comments via an online polling app. The content instructor usually gives concise comments, and helps answer the comments on the app immediately after the presentation. After all presentations are finished, the content instructor wraps up the discussion by indicating common errors and providing general suggestions. The language instructor, in turn, highlights students' erroneous English usages and corrects the English used in their slides and sends this feedback to the students after class. The final score for each presentation is averaged as the mean of the scores from the class (calculated using the online app), the content instructor, and the language instructor.

Technical writing

As the content of a research paper is covered by the content instructor in research methods, the language instructor mainly focuses on the hands-on skills of technical writing. The aim of this part is to equip students with basic tools for English writing, and to guide them through the process of putting together their research work in a section-by-section manner. It is hoped that by the end of the semester, the students will gain a clear picture of how an academic work is presented and also have a physical draft of their own work for future submission.

Starting from scratch, the language instructor first introduces the key concepts of English writing: the structure of English sentences and tips on organizing a paragraph. Concepts such as coherence and cohesion are also included, so that the students can use appropriate tactics to connect paragraphs

and sections more smoothly, and eventually weave them altogether to form a complete draft of their research work.

Practical grammar issues, word choice, and tips on writing style are also introduced as part of the language content in order to sharpen students' "feel" for the language. The structure of relative clauses, for example, is explained. This is because of observations by the language instructor during in-class activities and from students' writing assignments in previous TWRM classes have revealed that restrictive and non-restrictive uses of this high-frequency structure tend to be mixed up by the students. In a similar vein, tense and aspect are also reviewed via short lectures followed by guided group discussions. Students are encouraged to share examples or counterexamples from real published research to verify the concepts and rules they have learned in class. Through repetitive operations of memory refreshing and concept reviewing of these details, the language instructor believes that the students in this class are able not only to enhance their sensitivity to the English language, but also to become familiar with well-written research works in their research fields.

To accumulate hands-on experience, students are asked to hand in their writing assignments in accordance with the course schedule—first the introduction, followed by methodology, results, and discussion sessions accordingly, and finally the abstract. The grading process is comprised of two steps, for which both the language instructor and the content instructor are responsible. First, the language instructor is responsible for checking the logic, grammar and language of the writing. The corrected files are then passed on to the content instructor, who checks whether the prerequisite knowledge and content expertise, be it in the information or electrical engineering field, are properly described. That is, while the language instructor concentrates on the structure and language of writing, the content instructor is responsible for monitoring the content expertise of the students' work.

Students in general, have found it helpful to have their writing assignments corrected by both of the instructors, as shown in the following piece of feedback from the end-of-semester evaluation of the Fall 2009 class:

I recommend that all graduate students at the College of Computer Science and Electrical Engineering take this course. Students can benefit a lot from its content, especially the assignments. There is seldom a chance to also have a language major correcting your writing in a course offered by the [CSIE] department. Please continue to offer the course.

Language choices in TWRM

One side effect of globalization is that English is replacing other languages as a primary medium of instruction, especially in higher education. Integrated learning methods like EMI are designed "to even better equip the learner with knowledge and skills suitable for the global age" (Marsh, 2006, p. 30). Now

that English is the preferred language for presentation and publishing in academia (Li, 2012), and one of the goals of adopting EMI is to simultaneously sharpen language skills and pass on expert knowledge, the naïve thought is undoubtedly to assume English should be the only medium for EMI practice. However, based on Evans and Morrison (2011), even good English proficiency does not guarantee a painless learning experience in the EMI context, especially when students are used to communicating discipline-specific information in their first language. It is not surprising that previous studies have shown that in non-English speaking countries, a lack of ability among students and even instructors poses great challenges for EMI implementation (Doiz et al., 2012; Kim et al., 2017; Tu & Burns, 2014). For example, Turkish instructors in the engineering field believed that their students were not proficient enough to learn subject knowledge via English, and supported the idea of delivering the courses in Turkish, their native language (Basibek et al., 2014).

In Taiwan, English is learned as the first “foreign” language, rather than an official or “daily” language, and thus it is natural for students to have varying English proficiency levels. To tackle this problem, it has been decided that a compromise must be made in language choice in order to improve the efficiency of EMI. That is, instead of adopting the original mode of English-only instruction, the medium language of the TWRM course should be more flexible, able to change according to the occasion. The employment of pedagogically planned translanguaging strategies perfectly fulfills this requirement (García & Li, 2014).

Thus, unlike typical EMI courses, both English and Mandarin are used in TWRM. Mandarin is the native language of the two instructors and the majority of the students who take this course. The main reason for adopting a pedagogy of translanguaging was to allow for high-efficiency teaching under the time pressure imposed by the stipulation that both research methods and technical writing skills were to be covered in the class within one single semester. A bilingual mode has been adopted for the course and is adjusted in accordance with different scenarios in the class, details of which are shown in the following figure (Figure 3.1).

Class materials for the lectures on research methods are prepared in English, which usually include PowerPoint slides and accompanying handouts. The advantage of preparing materials about research methodology in English lies in the fact that most of the expertise and state-of-art findings in the fields of information and electrical engineering are published in this language, as mentioned in Li (2012, p. 65):

English is now virtually the preferred language of natural sciences regardless of the scientists’ language background, as shown in its preference in presenting and publishing research findings.

Thus, using the global language to prepare content knowledge for the course spares the cost of code switching, and gives the instructors and students a

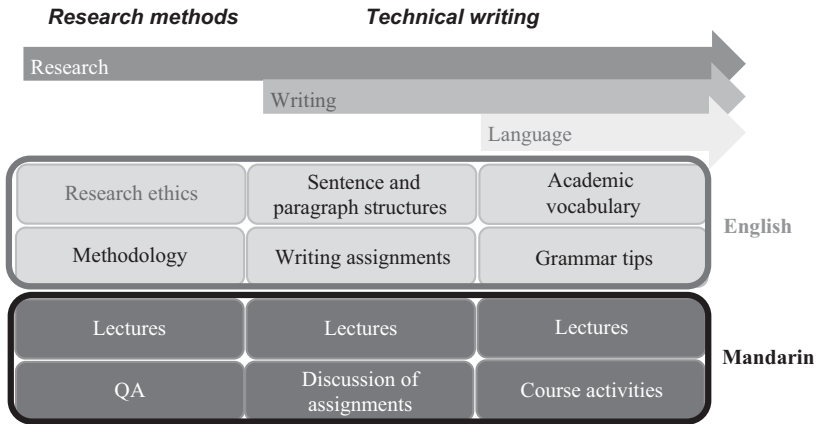


Figure 3.1 Course design and language choice of TWRM.

common platform for direct interaction using this lingua franca. In a similar vein, materials for technical writing skills are also written in English. After all, it is *English* writing skills that are to be taught—using the language itself for explication not only achieves for language consistency, but benefits from the convenience of providing authentic writing examples of appropriate language use.

In contrast, Mandarin is the choice for class delivery. Both instructors deliver their lectures in this language. Using their native language to explicate the content of the course materials (prepared in English) definitely facilitates students' understanding of the course content. Moreover, the rules or the formats for the assignments are less likely to be missed or misunderstood when they are expressed via L1. The same thought is followed in the comments on the students' presentations and in-class oral activities. The students feel it is easier to express themselves using their native language, which encourages them to share ideas in class. Lastly, the fact that teacher-student interactions and peer discussions are held in Mandarin undoubtedly contributes to a much more enthusiastic class atmosphere in addition to a more efficient communication.

Thus, in terms of language choice, not much difference is observed between the content instructor and the language instructor in terms of material preparation and class delivery. The greatest divergence resides in the language of students' assignments: For oral presentations related to individual topics on research methods, the students have to prepare their slides in English, but they are free to choose either Mandarin or English for delivery. Writing assignments, in contrast, must be written in English, as one of the main goals of this course is to give the students the ability to independently write a paper for submission.

In terms of correction, the content structure, grammatical use and word choice of students' presentation slides are checked by the language instructor after each presentation. Since the slides are prepared in English, the feedback is also given in the same language. Consistency of language choice is also found in the correction of the writing assignments: Suggestions for both the language part (the responsibility of the language instructor) and the content/knowledge part (the responsibility of the content instructor) are provided in English.

Though there are no specific language rules for teacher-student interaction or peer discussion in class, Mandarin has turned out to be the natural choice for most occasions because it is the native language of the majority taking this course. However, the monolingual mode becomes bilingual when international students sign up for the class. Based on previous experiences, foreign students who are fluent in Mandarin always directly communicate with the instructors and their fellow classmates in Mandarin. Those who could barely understand Mandarin, on the other hand, would choose to ask questions and express themselves in English, and the instructors and their fellow classmates would reply in English.

Discussion

Globalization has made EMI a trend in tertiary education all over the world, and Taiwan is no exception. However, despite the support and encouragement from the Ministry of Education, most professors still feel reluctant to offer EMI classes. English proficiency has been a main concern, be it from the faculty or from students. Most of the full-time faculty members in Taiwan are not native speakers of English, and it is natural they would worry that their pronunciation or language use might not be correct, which might negatively influence students' comprehension of the course content. In addition, the wide range in students' English proficiency levels further complicates the situation and increases the difficulty in implementing EMI courses. It is believed that, when compared with South Korea where engineering students in general have lower English abilities than those in other fields and whose universities do not propose any solutions to help the students (Kim, 2014), the graduate students in the Department of CSIE at this top ranking university in northern Taiwan possess better English listening comprehension skills, since most Taiwanese universities have instituted minimum thresholds for the graduation of the undergraduates. In addition, the university does provide a supportive system of language courses to strengthen students' English ability, as well as writing consultation sessions to help them revise their work. This is different from the cases of Japan and Korea, in which the lack of institutional support is commonly noted in EMI practice (Chapple, 2015; Kim, 2014), and to some extent, this support compensates for the varying levels of English proficiency that students on the TWRM course possess.

As mentioned, three features characterize the TWRM course. Firstly, scheduling the course based on the procedure of a typical information science research project provides students with a clear picture of the time sequence: How a study in this field should be brainstormed, designed, and executed. With this experience of starting from scratch, students are felt to be more confident conducting the larger-scaled research projects required for their theses later on.

Secondly, to adapt to the imbalance in English ability among the students enrolling in the class, a compromise has been made in the language choice of this EMI course—instead of adopting an English-only instruction mode, the concept of translanguaging has been incorporated into the design and implementation of the TWRM. Translanguaging-informed EMI programs may have different combinations of language use. For example, the input text can be entirely in English, with visual aids provided in the students' first language, or with the key concepts translated into the first language orally by the instructor. Alternatively, the input text can also be in the students' native language to ensure comprehension, with only key terms translated into English (Barnard, 2014). In TWRM, the medium language is task-oriented. For both instructors, English is used for course material preparation and the correction of writing assignments; for the students, it is used in the content of the assignments and in the visual aids used in their presentations. Mandarin, on the other hand, is the choice for class delivery, discussion, and class interaction. This decision allows both the instructors and the students to reduce the cost of code switching in receiving state-of-the-art knowledge and to simultaneously maintain efficient communication. Moreover, including the learners' native language into EMI teaching not only alleviates the negative impact of varying English proficiency levels from the students, but nurtures a positive class atmosphere of eager attention and active discussion. For example, written feedback from end-of-semester evaluations of the class of 2012 shows that students felt the instructors in general had guided them through the whole course in a systematic but easy-going and humorous way.

Lastly, the integration of the pedagogical strategy of "team teaching" (Doiz et al., 2012) into the course design also facilitated the effective implementation of TWRM. Traditionally, the two parts of team teaching in EMI refer to the content knowledge and English ability; however, in TWRM, rather than a clear distinction between content knowledge vs. the English language, the integration is between two domains of expertise: research methodology in the information and electrical engineering fields, and technical writing skills in academic English. The content and language instructors are each responsible for their respective domain. During the semester, they support each other in the design and execution of the course, helping each other out from time to time. For example, the language instructor might help the content instructor check the grammar and language use of the lecture slides before class delivery, and the content instructor might also supplement particular tense or modality preferences in English writing alongside the instruction of a certain section in

research methods. The smooth flow of the TWRM classes over the past years demonstrates a successful experience of this cross-field collaboration.

The end-of-semester questionnaire-based evaluations show that students who took the TWRM courses found the above characteristics of the course design helpful. Observing the collaboration of the two instructors from different fields, the students implicitly learned that conducting research and writing it up in academic English are two separate skills, both of which are equally critical and can be properly facilitated by appropriate training.

A good course! A good course! A good course!

(Class of Fall 2011)

Very useful in terms of both doing research and writing.

(Class of Fall 2011)

I would like to express my gratitude for the teachers' guidance. In this class, I learned how to do research and how to write appropriately in academic English, to which I had not paid attention before... This is by far the most practical course I have ever taken. It is definitely a course worth taking!

(Class of Fall 2012)

I have learned a lot from this course. I started to pay attention to the details about technical writing, and strongly believed that there is a lot more to learn. The way the instructors arranged the course content was clear, and it was easy for students to follow. It was a very good experience in taking such a course.

(Class of Fall 2013)

This is one of the best quality classes I have ever taken.

(Class of Fall 2014)

I was satisfied with the design of the course... In my opinion, it is efficient to learn this way. I am grateful for the teachers' guidance. Their opinions were very helpful, which contributed to my better understanding about doing research, and I look forward to completing a project on my own in the near future.

(Class of Spring 2018)

It has been a long time since my last time taking an English[-related] course. In this class skills of technical writing and research methods were taught, which helped me a lot on conducting a research project and writing it up in an academic way. The class was small in size, and thus there were more interactions between the instructors and the students.

(Class of Fall 2018)

Putting everything together, the TWRM should not be considered an ESP or EAP course, but rather a modified version of an EMI course. In an ESP or EAP course, language is always the main concern. Both the teacher and the students aim at acquiring the terminology and communication skills required for a certain discipline. This is different from an EMI course, since a connection between the language itself and high levels of knowledge in the relevant academic field is always to be expected (Shohamy, 2012).

One may argue that research methods do not involve “high levels” of knowledge in information engineering. In fact, it should be born in mind that those who enrolled in the TWRM classes had to conduct a research project of their own. As the students were either from the master or PhD programs in this field, the level of their studies is by no means be low. In the TWRM classes, although the native language of the instructors and most of the students is included in order to facilitate communication orally, English is nevertheless the main medium for class materials and sharing of research findings. All in all, with the inclusion of the training of academic writing skills and the use of English as a *tool* to explore and communicate expert knowledge in information engineering, the TWRM course should be categorized as one in the EMI realm.

Moreover, as scheduling of the TWRM is based on the procedure of a typical research project in information science, other courses in this field may follow the course design for EMI implementation, especially introductory ones where lecturing is adopted as the main format. For example, in courses like *Introduction to Human-Computer Interaction and Design* or *Introduction to Digital Image Processing*, the integration of expert knowledge and technical writing as delivered in the form of team teaching should serve as a good platform for effective learning and boost the pace of publication. This is because both the fundamental concepts and the techniques of academic writing are included in the same course, and thus students are guided through the complete process from the brainstorming of research ideas to the final report on their research work. In addition, the flexible combination of English and Mandarin in discursive practices not only provides a chance for the students to become more familiar with the use of the global language in their fields of expertise but ensures that they will not shy away from asking questions or taking part in discussion sessions during the class.

Though absent from TWRM, one very last thing worth noticing is that as mentioned in earlier sections, both the instructors and the students of EMI classes in higher education may face difficulties in preparing or taking the course due to their English proficiency level. Recently, in Taiwan, teacher development programs have been established to offer non-native English-speaking EMI teachers a chance to sharpen their language and pedagogical skills (Tsui, 2017). At the same time, additional supplementary resources like EAP courses, also serve as a way to enhance the academic ability of students who seem to lag behind so that they can better adapt to EMI classes (Huang, 2012).

Concluding remarks

EMI indeed provides a good opportunity to simultaneously learn both the content knowledge and the foreign language for learners from the countries where English is not a national language; however, corresponding details have to be carefully planned before real implementation. In the case of TWRM, the adoption of “team teaching” and a more flexible choice of the medium languages have contributed to a successful adaptive EMI implementation in the field of information engineering. Team teaching integrated expertise on research methods and technical writing in this course, during which each student conducted a real research project by following a step-by-step procedure. Moreover, both instructors and students benefited from the task-oriented translanguaging pedagogy. Higher efficiency and more engaged class atmosphere were achieved through the incorporation of their native language into the implementation of TWRM.

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4 Supporting students' summary writing skills in English medium instruction in the university context

Yangyu Xiao and Hintat Cheung

Introduction

English as a medium of instruction (EMI) has become increasingly popular in the Asia-Pacific higher education sector (Walkinshaw et al., 2017). EMI education has led to the internalization of higher education, improved reputation of universities, improved language proficiency among teachers and students, and greater mobility for graduates; however, the wide use of EMI education has also created challenges in teaching and learning subject knowledge in a foreign or second language, and poses a threat to the status of local languages in the academic context (Walkinshaw et al., 2017). One major concern in EMI education is whether students have sufficient English proficiency to meet the demands of their academic study, and how such discipline-specific language needs (such as the ability to write in a discipline-specific context) can be catered to. Whereas scholarly articles have revealed that students experience challenges in studying subject matter in a second or foreign language, how to help students develop their English language proficiency in their own disciplinary study is still a topic worth further investigation (Yildiz et al., 2017).

The study being discussed investigates students' discipline-specific language needs at one Hong Kong university that uses EMI and how such needs can be addressed through their experiences in using an online discipline-specific summary writing platform. To enhance students' discipline-specific summary writing skills, an online writing platform was created, and summary writing workshops were provided to a group of university students in Hong Kong. Data were collected through semi-structured interviews with nine students after they attended the summary writing workshops and experienced the online learning platform. The current study documents students' perceptions of their discipline-specific writing experience and discusses pedagogical implications of meeting students' discipline-specific language learning needs.

Supporting discipline-specific summary writing in the EMI context

The literature review was framed by three inter-related themes which highlight the necessity to support discipline-specific summary writing in the EMI context: 1) the benefits and challenges of EMI education, 2) discipline-specific language learning needs in the EMI context, and 3) summary writing as an academic writing skill.

English as a medium of instruction

There is an increasing tendency to use EMI in higher education in various geographical areas around the world (Dearden, 2014). The use of EMI dates back to the 1950s in Europe. The growth of the European Economic Community led to a need to provide multilingual and multicultural education (Barnard, 2014). EMI has become popular in Asian universities recently. Many places in Asia, like Hong Kong, Singapore, the Philippines, and Malaysia, are using English as a medium of instruction in the university context. A number of universities in Britain, American, and Australia are collaborating with Asian universities to provide EMI programs through co-teaching; some have even gone further to establish their own overseas campus (Barnard, 2014).

One major motivation of using EMI in universities is the trend toward internationalization. EMI is considered to bring several benefits, such as providing students with better career opportunities and chances for academic advancement in an international context, attracting international students and academics, enhancing universities' international connectedness and competitiveness, and satisfying the needs of intellectual exchange (see Byun et al., 2011; Macaro et al., 2017; Werther et al., 2014).

Whereas EMI has had a positive impact as expected, it has also met challenges. One commonly addressed challenge is the English language competence of university lecturers and students (Barnard, 2014). In a case study of EMI in the Chinese tertiary context, Hu and Lei (2014) revealed that the faculty members' inadequate English language proficiency was a main constraint for teaching effectively, as they could not deliver and explain instructional content competently. Similarly, students' insufficient English language competence made it difficult for them to comprehend the instructional content and express what they have learned in English (Hu & Lei, 2014). In addition, it was observed that when lecturers taught content courses, there was little room for facilitating the development of students' competence in their discipline-specific language. In a study of medical teachers' and students' perceptions of EMI programs in China, Jiang et al. (2019) observed that the classroom language of content courses were featured technical language and subject specific sentence structures, with little attempt made at unpacking the discipline-specific language. The above literature reveals a dilemma arising from the university's desire to promote EMI education and the inadequacy of discipline-specific English language competence. Thus, there seems to be

a gap between what the university desires to do and what the lecturers and students encounter in the implementation.

Discipline-specific language learning needs

English for academic purposes courses have been offered in many universities to enhance students' language proficiency (Barnard, 2014); however, students still feel frustrated about their language abilities in coping with their disciplinary courses. In a study of Korean medical students' perceptions of their EMI learning experience, students hoped that more support could be provided by the university to increase their learning efficiency. Students expected that they could obtain more language support through taking discipline-specific English language courses, such as medical English courses, English remedial courses, or sessions where teachers could explain medical terms and jargon in English (Joe & Lee, 2013). This study indicates that merely providing academic English courses is insufficient for students who plan to study in an EMI context.

In Hong Kong, Evans and Green (2007) conducted a large-scale survey focusing on university students' linguistic difficulties in an EMI university. The findings show that students had problems with academic vocabulary, academic writing, and speaking. Regarding writing, students reported that they had little confidence regarding all aspects of academic writing, such as summarizing, paraphrasing, and synthesizing information. Such findings support the needs to study discipline-specific language learning requirements to help students to study more effectively in an EMI context.

The current chapter focuses on discipline-specific language learning from the angle of academic writing, inasmuch as academic writing is a key skill that students need in an EMI context. Essentially, effective academic writing in students' own subjects requires a variety of subject-specific literacies. Through these literacies, members of disciplines communicate with their peers, and students with their professors in a more professional way (Hyland, 2002). In a study exploring the academic writing needs of students of the University of British Columbia for whom English is not their first language, students considered that writing was the most important skill (followed by reading, speaking, and listening). In terms of writing needs, students expected academic writing courses to help them in the following areas: gaining a good command of standard written English, using examples to support a position, organizing ideas effectively, writing on the topic with precision, and using vocabulary appropriate to the topic (Huang, 2010).

Summary writing as an academic English skill

The current study focuses specifically on summary writing as a writing skill that students frequently use. Writing a summary in English is essential for academic learning in EMI programs, but is an especially difficult

skill when students need to complete their theses or project reports in their second or foreign language. Summary writing requires the ability to identify main ideas from source information, to synthesize, and to convey this information succinctly and coherently in writing (Landauer & Psotka, 2000). Conventionally, summary writing has only been employed as language learning practice. However, extensive research in higher education has shown that summary writing can also be used as an efficient tool to serve knowledge construction in different disciplines (Klein et al., 2014) and to enable students to engage in deeper learning (Wade-Stein & Kintsch, 2004). Research has also shown that summary writing as a tool of learning produces better results if combined with revision practices following corrective feedback (Bitchener, 2008). In considering the popularity of EMI education and the importance of developing discipline-specific language needs in EMI education, the current study intends to answer the following research questions:

- 1 What are students' perceptions of EMI education and their discipline-specific English language learning needs?
- 2 To what extent can disciplinary summary writing workshops address their discipline-specific language needs?
- 3 What are the selected university students' perceptions of the online summary writing platform?

Research methods

The current study was a small-scale project intended to foster students' discipline-specific summary writing skills in an EMI context.

The context

The current study was conducted in a university in Hong Kong where English was used as the medium of instruction for most of the subjects, except for some general education courses and Chinese courses. English was used in classroom teaching, assignments, and assessments. Most of the students spoke Chinese (mainly Cantonese and the rest Mandarin) as their mother tongue; many went to schools where Chinese was used as the medium of instruction before they came to the university.

Supporting students' discipline-specific language learning needs has become a major task for the university. Among all language skills, writing summaries in English is an essential skill for learning given that undergraduate students need to complete a research project in their final year and postgraduate students need to write up research papers frequently. However, students usually struggle with this critical academic skill. One possible reason leading to this situation is that summary writing is a higher-order skill that

requires discipline-based practice guided by structured writing tasks and tailor-made feedback; it requires a close integration of language teaching and disciplinary knowledge. Thus, the current study was conducted in such a context, with the purpose of supporting students' summary writing skills within their specific disciplines.

The discipline-specific summary writing platform

To support students' discipline-related language learning experience, an online discipline-specific summary writing platform was constructed. The online writing platform gave students the opportunities to practice their summary writing skills by themselves at their own pace.

The construction of the summary writing platform proceeded in five stages: 1) the research team collaborated with content teachers from different departments to select key literatures that students needed to read for their own disciplinary courses; 2) PhD or master's students from the related disciplines were invited to develop expert summaries which were used as the exemplar summaries on the platform; 3) the expert summaries were edited and polished by language experts after completion; 4) an IT technician developed an algorithm which could compare students' summaries and expert summaries (on the same topic), so as to generate a content score based on the quality of the summary, and 5) the PiGai platform (a tool similar to Grammarly) was integrated into the summary writing platform to generate feedback on the language.

When students submitted their summaries on the writing platform, they received a score indicating their performance on the content, as well as feedback on language. One sample summary was shown on the screen for students' reference. In this way, the online summary writing platform offered students both feedback on language and a score indicating their performance on content. In addition, students were asked to self-reflect on their own summary by answering a series of questions on how well they had completed the task (see Appendix 4A) and write their reflections. The self-reflection exercise encouraged students to reflect on whether their summaries achieved the expected standard. To sum up, the key purpose for adopting the discipline-specific summary writing platform was to provide discipline-specific language support to students, with the purpose of fostering the language proficiency needed in an EMI context.

When the platform was ready, the research team organized three three-hour discipline-specific summary writing workshops where students were trained in summary writing skills and then asked to write their summaries on the online summary writing platform. Each student was required to attend only one workshop, and 30 students in total attended the workshops. While the study is small scale, it is sufficient to act as an exploratory study of students' perceptions of such a learning experience.

Data collection and analysis

To obtain students' perceptions of the summary writing platform and their learning experience of discipline-specific summary writing, semi-structured interviews were conducted with nine students majoring in mathematics, composed of seven undergraduate students and two master's students. All the participants have attended the summary writing workshops and used the online learning platform. Each interview lasted for around one hour. All interviews were conducted in the language that both the students and the interviewer were most familiar with (Cantonese or Mandarin). All interviews were transcribed and translated into English after coding.

To provide answers to the research questions mentioned earlier, the interview questions focused on students' perceptions toward three major issues: 1) EMI education in the university context, 2) discipline-specific summary writing workshops, and 3) experience of online summary writing. The interview questions were developed to obtain students' perceptions of their discipline-specific language learning needs, and the extent to which the discipline-specific summary writing training met their needs.

Data were analyzed through NVivo 11. The theoretical framework as established in the literature reviewed guided the data analysis with all data coded under three main themes: benefits and challenges of EMI, discipline-specific language learning needs, and perceptions of discipline-specific language training. The subcodes emerged from data in a grounded way. After the initial round of coding, the research team discussed the major themes and codes emerged.

Findings

The findings section focuses on four main themes: 1) students' perceptions of EMI education, 2) students' perceptions of discipline-specific summary writing workshops, 3) students' discipline-specific language learning needs, and 4) students' perceptions of the online summary writing platform.

Students' perceptions of EMI education: Benefits

Student participants addressed multiple benefits of EMI education. One major benefit agreed on by students was that EMI education offered them chances of future development, as shown in the responses below:

EMI education is good, in particular if you want to pursue further academic studies in the future.

(Sunny)

EMI is necessary if you want to go abroad for further studies.

(Sonia)

Both Sunny and Sonia's responses show that EMI education is an important pathway if students would like to pursue further studies in a different country. Such an opinion can be further supported by the viewpoint that EMI plays a key role in internationalization.

Susan, a master's student in Mathematics Education, articulated that EMI education provided her chances to study education pedagogy in different countries:

Through learning math pedagogy through English, I had a better and a deeper understanding of pedagogy in Western countries... More importantly, if I want to do a PhD, I will need to read a lot of resources in English.

(Susan)

Susan's response shows that EMI education opens a door for students to get access to different resources in English. Sally, another master's student, mentioned explicitly that with sufficient English language proficiency in her own discipline, she had more chances to survive in an internationalized era. The above-mentioned students' responses show that EMI education provides them more choices for future study and career.

Sarah, a student majoring in primary mathematics, felt that EMI education enhanced her professionalism. English is now an official language in Hong Kong, and many professionals—such as doctors, lawyers, and academic professors—have an excellent command of English. Sarah felt that she had a sense of professionalism arising from her good language proficiency in her discipline. Susie, a student majoring in secondary mathematics, pointed out that the sense of being professional was also related to the fact that under EMI education she has developed a better understanding of mathematical terminology and usage in English; thus, she would be able to use these better in an international context.

EMI education also helped students improve their English language proficiency. Sandra, a final year mathematics student, admitted that she had difficulties in learning math through English at the beginning; however, after several years of study, she had made improvement in discipline-specific language proficiency. She now felt more comfortable attending lectures in English and completing assignments in English.

In summary, EMI education seems to benefit students by helping them improve their discipline-specific language proficiency, which provides them with more chances to study and work in an international context.

Students' perceptions of EMI education: Challenges

Despite the many benefits of EMI education, students in the study felt that current EMI education was constrained by the English language proficiency of both lecturers and students.

Student participants pointed out the teachers' oral proficiency constrained their understanding of the subject matter, as stated in the response below:

Most mathematics teachers had a strong accent, and it was hard for me to understand the content. I would prefer them to speak Cantonese.

(Sunny)

Sunny's response shows that in the EMI context, the subject teacher's language proficiency reduced the effectiveness of classroom instruction thus, affecting students' comprehension of the content. This issue was more clearly elaborated by another student:

My lecturer has excellent knowledge of the discipline, and his research is also in this area. He can speak fluently; however, I still felt that he could not express his meaning clearly to us. Many of my classmates found it too difficult to complete his course.

(Susie)

Susie's response further supports that her lecturer's insufficient oral English skills hindered students' comprehension of subject-matter knowledge. Sarah had a similar opinion. To compensate for her difficulty in understanding the lectures, she had to study lecture notes after class.

Some students also admitted that they themselves did not have adequate English language proficiency to cope with EMI education. Sarah, a Year 2 student majoring in primary mathematics, responded that as Cantonese was used as the medium of instruction in both her primary and secondary schools, she experienced quite a lot of difficulty at the beginning, as she knew nothing about mathematical terms in English. Stella, a Year 2 student majoring in secondary mathematics, expressed her difficulty in learning mathematics through English despite experience of EMI education in her secondary school, as shown in the response below:

Learning mathematics through English is difficult for many students who are not good at English. My secondary mathematics were taught through English, but I still had difficulties. There were still a lot of new terms that I could not understand. I had no idea what teachers were talking about or how to use these mathematical symbols... but things seemed to have gotten better since Year 2.

(Stella)

Stella's response shows that insufficient discipline-specific language proficiency made it difficult for her to understand the lectures and put what she had learned in class into use. The negative impact of insufficient English language proficiency on the study of content knowledge was also evident in Sonia's response:

I am not good at English and I have a limited vocabulary. I found it hard to understand teachers' English and thus, I could not learn the subject matter well.

(Sonia)

Sonia's response shows that she attributed ineffective learning of the subject matter to her insufficient English language proficiency and the use of English as a medium of instruction. It is possible that students might learn the subject matter better in a language they are more familiar with. Such responses indicate that to support students learning in EMI universities, attention needs to be paid to the discipline-specific English language learning.

Experience of discipline-specific summary writing workshops

One of the important purposes of the current project is to support discipline-specific language learning. In the interviews, students were asked to comment on their perceptions of the effectiveness of the discipline-specific summary training workshops.

Students commented that the benefits of discipline-specific summary writing workshops were threefold. First, students were able to study summary writing skills in a discipline that they were familiar with, as shown in Sonia's response below:

I am grateful that we had such a workshop; our reading was related to primary mathematics. We have never had such summary workshops related to our major like this before. It made it easier for me to understand math literature.

(Sonia)

Sonia's response shows that when studying summary writing skills in her own discipline, it was easier for her to understand the related content. It seems that a discipline-specific language learning experience facilitated the development of language skills. Stella related such learning experience more closely to the disciplinary study:

The mathematics articles are more interesting. We will have to read mathematics articles when we conduct our research project in Year 4. It will be great if we can have similar workshops when we do these research projects.

(Stella)

As a Year 4 student, Stella seemed to relate the disciplinary language training more closely to the research project she will work on in her final year. As she explained, she needs to write a literature review when doing the project and

thus, summary writing will be an important skill. However, currently the university does not provide sufficient discipline-specific language courses, which indicates that further improvement in the course design is needed.

Second, the discipline-specific summary workshops helped students strengthen their summary writing skills. Sally, a postgraduate student, responded that she could apply the skills she learned in the workshop to study in her own discipline:

After the summary writing workshop, I had an assignment in my own major course which required me to write a summary and then conduct a peer review. I used the skills we discussed in the workshop in my own writing. My peer commented that my summary was professional.

(Sally)

Sally's response indicates that she can apply the skills she obtained in the summary writing workshop to a different writing task in courses in her own discipline. This seems to support the idea that language skills obtained from a discipline-specific language learning experience can support learning in discipline-specific courses.

Sarah responded with a more specific comment on what she had learned from the workshop, as noted below:

The workshop helped me to write a summary in an organized way. Before attending this workshop, I wrote a summary according to the sequence that the information occurred in. Now I know I need to start with a statement of purpose, then discuss the key issues, and finally end it with a conclusion. In my view, this kind of summary is more complete.

(Sarah)

Sarah's response shows that the summary writing workshop taught her how to write an organized summary and she was able to clearly articulate what she had learned. Sarah believed that it was likely that she would have a better idea of how to write a project report in her final year as the workshop informed her of the key elements of a good summary. It seems that the discipline-specific summary writing workshops raised students' awareness of how to write a good summary, and the skills they obtained in the workshops are likely to be transferable.

The skills students obtained from summary writing workshops also went beyond summary writing itself. Susan exemplified that her lecturer in mathematics gave her a few theoretical articles on mathematics pedagogy recently and asked her to identify the strategies that she could use in her own teaching. She applied the skill of "identifying the main ideas of a passage" which she has learned in the summary workshops and found that she was able to grasp the key points much faster. Similarly, Sandra, a Year 5 student who was working on her final year project report at the time of the workshop, addressed how

she applied the skills the teachers covered in the summary writing workshop to the writing-up of her literature review.

I am now working on the literature search for my final year project report. I know I need to pay attention to the first paragraph, the topic sentences and the abstract, and to search for any further information I need. I know how to summarize a source once I have read it.

(Sandra)

To sum up, the discipline-specific summary writing workshops seemed to play a supportive role in student learning by providing students with the opportunity to study language skills within the context of a discipline which they were familiar with. The discipline-specific summary writing workshops seemed to raise students' awareness of elements which they need to pay attention to when writing a summary, such as structure, organizational strategies, strategies for extracting useful information from the text, and chances for further practices of summarizing skills.

Summary writing and discipline-specific language learning needs

Despite the perceived effectiveness of summary writing training, there appeared to be a gap between discipline-specific language learning needs and the summary writing workshops the research team offered. Students pointed out that the summary writing workshops did not fully meet the learning needs of mathematics students, as shown in the responses below:

We had few chances to write a summary in our own major courses. Most of time, we took examinations.

(Susie)

As a Year 2 student, I need to write lesson plans and articles on teaching pedagogy. We seldom need to write a summary.

(Sarah)

Susie considered that mathematics students have little need to write essays, compared with students studying English language education. Sarah's response indicates that the writing tasks required in her own major did not include summary writing tasks. It is understandable that undergraduate mathematics students may have their own discipline-specific language learning needs. Thus, to support disciplinary learning in the EMI context, teaching of academic English skills must address students' language learning needs as determined by their own disciplines.

Compared with undergraduate students who probably had fewer chances to write, postgraduates tended to believe that the summary writing workshops were beneficial.

As a postgraduate student, I found the workshops very helpful. I wrote an abstract and a summary last month and again two days ago.

(Sally)

I need to write several reports this semester. It is good for us to learn the skills required to write a good essay. We may use the ability when we apply for doctoral study later.

(Susan)

Sally and Susan's responses show that they perceived the summary writing training to be more relevant to them, probably because postgraduate students need to engage more in high-order academic writing in their discipline, so as to showcase what they have learned. The perceived relevance to students' current and future study affects their perceptions of the effectiveness of the workshops.

When asked what language support the university has offered and to what extent they considered that support to be effective, students responded that the university only offered generic English for Academic Purposes courses.

We have academic writing in Year 1. But this is not helpful. It is just one general English course and there was nothing about our discipline.

(Stella)

We have a course called "Sets and Logic." In that course, the teacher helped us revise all the symbols in English, and we studied logic in English again. It helped us to get accustomed to the English in university.

(Sammy)

Students' responses above indicate that currently in their university the language teachers and discipline teachers work separately to offer either general English courses or disciplinary courses. However, insufficient efforts have been put into the integration of the two, to address students' discipline-specific language learning needs. Students' responses indicate that it would be helpful for universities to offer discipline-specific language courses. In addition to writing summaries, students also identified a number of areas of academic English that they would like to learn in their discipline-specific context, including academic vocabulary, developing introductions and conclusions, structuring of essays, and writing lesson plans and rationales. They also hoped that disciplinary language courses for different year groups could be offered.

Experience of online learning

One of the key features of the discipline-specific summary writing project was that students had chances to write their summaries on a learning platform and

obtain machine-generated feedback. This process could also be employed as a tool for supporting discipline-related language learning in the EMI context. The intended purpose of the project is to provide students an opportunity to practice summary writing skills in their own time. Students' responses show that the online summary writing platform has achieved this goal:

If more summary writing tasks or more types of writing related to reading literature were offered, I would use the platform for self-study.

(Stella)

It is good that we can get feedback on our essays without a teacher.

(Sarah)

Although the current project is only a pilot project focusing on summary writing skills, students' responses indicate that similar platforms with diverse tasks on discipline-specific summary writing could be used for their self-study.

Students commented that one particular strength of the platform was the content related feedback, as shown in the response below:

Most learning platforms can only point out grammatical mistakes. It is good that this platform offers content related scores. It is also good that we can see a sample summary so that we know what the good summary looks like.

(Sally)

We can compare our summaries with the good one and see if there are any differences. Just like when you take IELTS and you want to know what an essay achieving band score 9 looks like.

(Sonia)

Sally and Sonia's responses addressed a key function of the learning platform—to offer content scores and a sample summary. It seems that these offer valuable feedback for students on their discipline-specific summaries. As machine-generated content feedback was not possible using this platform, students felt unsure as to how to improve their writing in this area. Sunny pointed out that she did not receive any feedback on the logic of her writing or on her comprehension of the text. This indicates that more support from disciplinary language teachers is needed if students are to be given content related feedback.

As it is hard for the platform to generate automatic content feedback, the research team developed a self-reflection task on the platform, which asked students to self-reflect on the eight indicators of a good summary that were covered in the workshop (please refer to Appendix 4A for the self-reflection questionnaire). Students considered that the self-reflection task reminded them of the criteria of a good summary and the specific aspects they need to

pay attention to when writing a summary, with Stella's response below as an example:

The self-reflection task provided us with a specific goal for learning. Some students often forget that they should not add their own opinions when writing a summary. When they read the self-reflection task, they are reminded how to improve.

(Stella)

Thus, it seems that the self-reflection task can be complimentary to teachers' support in some way, in particular considering that the main channel for students to obtain feedback in this project was the platform. Students recommended that the online summary writing platform could be improved in several ways, such as adding more interactive tasks on the platform, adding tutorial videos to the platform, and providing an annotated sample summary to highlight the key elements of a good summary. Such additional features would provide further chances for students to practice discipline-specific language skills at their own pace.

Discussion

The current study is a small-scale innovation project focusing specifically on summary writing as an academic writing skill and students' perceptions of EMI education in an EMI university in Hong Kong.

In response to the first research question, students' responses provide support for the previous literature that EMI education provides them better future prospects in terms of academic study, in particular in an era of internationalization (Macaro et al., 2017). At the same time, the effective implementation of EMI education is also restricted by students' and lecturers' insufficient language proficiency (Barnard, 2014). The benefits of EMI education and the challenges in implementing effective EMI education highlight the need for teaching English in a discipline-specific context, as a lack of the language proficiency hinders effective learning of subject knowledge.

Regarding the second research question, students believed that the discipline-specific summary writing workshops were more relevant and interesting than general academic English training. It was easier for students to understand the course materials and practicing writing skills in a discipline that they were familiar with. Students also articulated practical examples where they could apply the skills they obtained in the summary writing workshops (such as identifying main ideas or looking for specific information) into their own disciplinary learning. Such findings support the necessity of paying attention to students' discipline-specific language needs (Evans & Green, 2007) and of collecting evidence on how discipline-specific language learning may facilitate students' academic study in the EMI context.

However, some undergraduate students in the current study pointed out that the discipline-specific summary writing workshops did not fully support their discipline-specific language needs as they were not required to write articles in their academic study. Compared with undergraduate students, post-graduate students found that the workshops were more relevant and helpful. As for undergraduate students, they hope that more discipline-specific language support can be provided in learning vocabulary suitable for academic writing, developing introductions and conclusions, structuring essays, and writing lesson plans and rationales. Students' responses revealed their needs for discipline-specific language learning, and their expectation that discipline-specific language learning should better fit their needs. Such responses indicate that a needs analysis should be conducted before the development of discipline-specific language courses in the EMI context (Huang, 2010).

As to students' perceptions of the online summary writing platform, students' responses show that it provided them with the opportunity to practice summary writing on their own initiative and to self-study thus, allowing them to self-regulate their writing development. The online learning system was considered to be helpful, as grammatical feedback and content scores were generated automatically, which facilitated self-study. Students also found the sample summary provided by the system helpful as it clarified the key aspects of a good summary. However, students hope that the online summary learning platform can become more interactive and offer training tasks for a wider variety of disciplines.

The current study also revealed the pedagogical implications of introducing EMI education into the higher education context. First, discipline-specific language courses should take into consideration students' language needs (e.g., by considering the type of writing they need in their own disciplinary courses). Second, the online learning platform needs to incorporate interactive writing tasks so that students have an opportunity to reflect on their writing and act on the feedback. Third, diverse discipline-specific learning tasks should be developed with the collaboration of language teachers and subject matter teachers, to meet the needs of students with different language proficiencies.

The limitation of the current study lies in that it is only a small-scale trial project using data collected from a single workshop as well as the online learning experience associated with that workshop. Further studies should investigate students' prolonged engagement in discipline-specific courses over a semester and on different topics.

Conclusion

The current study explores students' needs for discipline-specific language learning and investigates to what extent the summary writing workshops and an online summary training platform can meet such needs. The findings

indicate that students have discipline-specific language needs, which need to be catered to if students are to study effectively in EMI education. The discipline-specific learning experience can also be facilitated with online learning tools. This chapter enriches the understanding of how language teachers and universities can support students' study of subject matter courses in the EMI context by fostering their discipline-specific language proficiency. The limitation of the current study is that it only focused on the learning experience of a small number of students in a single workshop.

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APPENDIX 4A

Students' self-reflection after writing a summary

Self-reflection after writing a summary			
☺= Yes. I have achieved this criterion.			
☹= I could be doing better at this.			
☹= I am not doing this and I need to work on this.			
Items for reflection	☺	☹	☹
1. My summary is brief and is within the word limit.			
2. I have included the main ideas.			
3. I have included the key supporting details.			
4. I did not include specific information.			
5. I did not add in my own opinions (objectivity).			
6. My summary truly reflects the ideas in the source text (no misinterpretations).			
7. I used synthesizing and paraphrasing (no direct copying).			

5 Conducting EMI with students of diversified backgrounds

The case of business management

Hsiou-Wei William Lin and Anita Chunwen Lin

Introduction

Amidst the global phenomenon of English being used as the medium of instruction (EMI) in universities in non-English-speaking regions or countries, it has been found, both in Taiwan and abroad, that such a trend is particularly prevalent in several academic disciplines, including the fields of business and management (Dearden, 2014; Macaro et al., 2018; Pritasari et al., 2019; Wilkinson, 2011). The well-established status of English as the lingua franca across business and other professional areas renders it an obvious choice for the medium of instruction for universities that aim to internationalize their campuses. Also, as the degree of internationalization, in terms of the number of international students and staff, is an important indicator for business school rankings, EMI has been promoted to facilitate the recruitment of overseas faculty and students.

Stakeholders involved in designing and delivering EMI programs and courses in business and management are faced with issues already widely discussed in EMI-related research, such as students' lack of speaking skills required for participating in discussion tasks and the lack of student engagement in the classroom (e.g., Airey, 2011; Chang, 2010; Evans & Morrison, 2011; Fenton-Smith et al., 2017; Flowerdew et al., 2000; Huang, 2009, 2012, 2014). In addition, subject teachers in these fields face the pressure of managing classes that often comprise students of diverse first languages, cultures, academic backgrounds, motivations for taking EMI classes, and registration statuses (e.g., degree vs. exchange). Moreover, in keeping with the practice of including case study research in their courses, EMI teachers are expected to lead case discussions in English, through which students have opportunities to analyze real-life business situations, gather information, identify problems and concerns that businesses encounter, propose strategies or solutions that can be adopted by these businesses, and finally, gain insight into complex business issues. All of these competencies are not only important to classroom performance but also indispensable for actual business communication and decisions. To encourage students to actively express their opinions and exchange viewpoints with one another during case study research, EMI

instructors need to carefully devise various interactive tasks (e.g., teacher-led class discussions) and oversee the implementation of these tasks (Esteban & Cañado, 2004; de Prat, 2020; Northcott, 2007). All of the above constitute challenges and concerns for EMI teachers in the business and management fields.

This chapter bases its observations on a top-tier national university in Taiwan that, during the past decade, has embarked on an initiative to implement EMI for content courses. The chapter will therefore provide a case study of the current status of the implementation of EMI in a specific Taiwanese context of the business management field. Then pedagogical practices and challenges specific to the discipline, such as the expectation that the subject teachers will manage case discussions with students of diverse backgrounds, will be described. Next, pedagogical guidelines for enhancing interactions both between teachers and students and among students will be suggested. The chapter will conclude by providing discussions and suggestions on the employment of these guidelines. It should also be pointed out that the purposes of the present chapter are not to investigate the possibility of promoting English learning itself through EMI in business management, the impact of English language proficiency on the delivery of EMI classes, or the language needs of these classes. Rather, the main focus of this chapter will be the ways instructors can conduct business subject classes in English while maintaining or even enhancing class interactions, a challenge often mentioned by EMI teachers and researchers.

Implementing EMI in the business management field

Similar to most other higher education institutions in Taiwan, the university reported on in this chapter has experienced significant growth in the number of EMI courses in recent years. The university's online course-search system shows that in the second (spring) semester of the 2018 academic year, over 900 EMI courses were offered on the campus. This number, which is six times the number of EMI courses offered a decade ago, reflects the institution's intent to fulfill goals outlined in the projects related to the development of higher education initiated by Taiwan's Ministry of Education (2001, 2011, 2013, 2016) and the university's own aspirations to improve its university ranking internationally. Currently, EMI courses account for 6% to 7% of the total course offerings, in line with the average proportion of EMI courses to total courses country-wide (Chung & Lo, 2016).

The university comprises a wide range of fields of study in science, the arts, and humanities. Among them, the College of Management is known for its desire to expand the implementation of EMI. First, one of the college's core values is a commitment to equipping students with the English communicative skills required in academic and business domains. Therefore, EMI courses are considered as platforms for preparing local students with the necessary communication skills. Second, a sufficient supply of EMI courses is

viewed as one of the prerequisites for sustaining continued collaboration on exchange programs with international partner business schools. For example, a 2016 report from the college explicitly stated that “an increasing number of EMI courses are being offered to respond to new contracts with international institutions on exchange programs and to meet the needs of incoming foreign students sent by these partner institutions.” (College of Management of National Taiwan University, 2016). In fact, EMI courses offered by this college, like those offered by business colleges in other Taiwanese universities, are often popular among both business major and non-business major international students due to these courses’ availability and variety in terms of the topics covered. Each semester, the College of Management hosts an average of 200 international students of more than 60 nationalities. To accommodate these students, it offers around 70 EMI courses as well as two Master of Business Administration (MBA) programs offered in English, more than the number of English taught courses offered by most other colleges in the same university. The phenomenon of the business management discipline offering more EMI courses than other disciplines do is consistent with what has been observed in other universities in Taiwan (Dearden, 2014).

The college has identified specific measures to promote the implementation of EMI. It encourages its in-service teachers to deliver courses using English by providing them with financial subsidies and human resources such as teaching assistants. In addition, since 2010, preparedness to conduct content courses in English has become an important criterion in the recruitment process for new faculty members. The newly-recruited teachers are expected to offer EMI courses for at least six years. Similar policies, either written into contracts or verbally agreed upon by both the hiring institutions and the new hires, have also been adopted by other business colleges in Taiwan. For instance, a recruitment announcement from a management-related department at one university specified that the new hires would have to offer at least three English or Chinese–English bilingual courses within three years of employment (National Taipei University of Technology, 2019). A similar announcement from the business management department at another university specified that the new hires would have to teach at least two credits in English per academic year (National Central University, 2019).

It should be noted that most of the college’s subject teachers consider English the only, or at least the dominant, language for conducting lectures, activities, and assessment tasks in EMI courses. Such a practice may be attributed to the presence of international students, who usually make up more than half of the class. Another reason for the practice is the nature of the content of business courses, which is considered “internationally-oriented” (Macaro, 2018). In terms of language requirements for students from non-English-speaking regions or countries, currently no English language proficiency test-score benchmarks have been set for admission to the EMI courses offered by the college. Nor do EMI instructors themselves feel it is legitimate to set any prerequisites for the enrollees regarding their English language

proficiency. In contrast, applicants to the English-based MBA programs are required to submit English language scores for tests such as the TOEFL iBT or IELTS unless they are from English-speaking countries or have earned a graduation certificate from an English-speaking country.

In sum, EMI-related policies do exist, despite the lack of language requirements. There are also academic subject teachers working to facilitate the implementation of these policies. A sufficient number of academic courses are taught in English, and a sufficient number of students participate in these courses in this specific EMI setting.

Issues and challenges of EMI in the business management field

Policies on internationalization and faculty recruitment as well as the presence of international students are commonly deemed as promising factors for EMI implementation. Nevertheless, some hurdles and challenges remain. Those are explained below.

Diverse student backgrounds

Students enrolled in the courses offered by the aforementioned management college are diverse in terms of their first languages, nationalities, reasons for taking EMI classes, and academic backgrounds. Typically, overseas students account for half of the students taking the EMI classes. Some of them are pursuing degrees, but many of them are short-term students who need to participate in EMI classes to earn credits during their limited stays on campus. These exchange students, who are often not majoring in business management, are sometimes perceived by their EMI teachers as less committed to their studies. As these short-term students are generally more interested in exploring local cultures than in focusing on academic studies, they can be deemed by fellow local students as irresponsible team members when it comes to group assignments. As a result, EMI teachers in this college found that they faced the difficulty of dealing with mixed classes composed of local and international students who have very different attitudes, linguistic backgrounds, and academic backgrounds.

Large class size

It is not unusual for EMI instructors of business field courses to manage classes that are overcrowded. For instance, EMI business courses are very commonly selected by the college's international students, including those related to organizational behavior, human resources management, investment, finance, and marketing. The numbers of students in these lecture or discussion courses range from 40 to 150, far exceeding those in courses offered in other disciplines. Overcrowded classes present challenges for teachers, for the time devoted to interacting with and providing feedback to each student

is reduced. To find ways to better engage with students in the learning process, teachers often need to implement a variety of interactive activities (e.g., inviting ideas from students in Q&A sessions), which require additional planning and management.

Inclusion of business cases

The case study method, a pedagogy developed at Harvard Law School in 1870 (Carter & Unklesbay, 1989; Merseth, 1991), is widely adopted by business schools around the world (Saks & Haccoun, 2019). In accordance with international practices, case methods of learning are a core component of business education in Taiwan. Courses in the management college are often taught with at least one quarter of the class time dedicated to the study and discussion of business cases. Several issues with this approach arise in the EMI classroom. First, in the teaching aspect, the need for subject teachers to conduct case discussions with students of diverse backgrounds entails extra pressure in terms of effective and efficient course management and content delivery. For instance, in the case of the College of Management reported in this chapter, its EMI professors sometimes need to intervene within case study teams to solve conflicts arising from different learning attitudes and allegedly uneven divisions of group work. In the learning aspect, the impromptu nature of classroom case analyses may discourage students with lower English-speaking proficiency from actively taking part in the discussions or interactive tasks that require students to talk with one another or with their teachers. Furthermore, an important feature of the university's business management education is the inclusion of local and international cases, both of which are essential for developing a comprehensive understanding of business operations in global markets. However, cases discussing the operations of Taiwan-based enterprises are mostly written in Chinese. Due to constraints in time and resources, few EMI instructors are able to write cases in English on their own for Taiwan-based firms such as Largan Precision Company Limited, a company that manufactures electronic components, or 85°C Bakery Café, a coffee and bakery chain that operates shops in many parts of the world. Instead, EMI teachers predominantly adopt cases written in English from North American institutes such as Harvard University and the University of Western Ontario, as well as textbooks that discuss business operations in Europe or North America. Students in EMI classes consequently have limited access to these local cases and related analyses. These students therefore have few opportunities to study Taiwan's business environment.

Because of the inclusion of case studies, classroom interactions both among students and between teachers and students are an integral part of the business management course, regardless of the language of instruction. In the specific EMI context that is the focus of this chapter, teaching issues such as diverse student backgrounds and large class sizes can complicate how well students' engagement with learning activities and their interactions with

teachers and fellow students may be facilitated and achieved. In EMI literature ensuring student engagement by increasing interaction has been a key concern (e.g., Chang, 2010; Chuang, 2015; Hsieh et al., 2007; Huang, 2014). These studies pointed out that the choice by EMI teachers of whether to incorporate interactive tasks (e.g., group discussions) in their classes is often related to factors such as discipline, course type, and class size. But they also showed that the employment of these tasks and students' active participation in the tasks have increasingly been considered essential elements of successful EMI practices. In the following sections, an overview of the perspectives from which previous research studies have viewed the purpose of interaction will be provided. Then the implementation of interactive activities in the EMI classroom in the context considered in this chapter will be described. Finally, some examples of approaches to and guidelines for conducting EMI courses will be offered with the aim of alleviating the challenges faced.

Research on interaction in the EMI classroom

Previous studies related to EMI in higher education have pointed out that subject teachers adopting English as the instructional language often encounter problems in capturing the attention of demotivated students. Interactive activities are therefore used as instructional approaches to promote student participation and to enhance the effectiveness of EMI teaching and learning (e.g., Chuang, 2015; Hsieh et al., 2007; Huang, 2014; Li & Wu, 2018). When proposing suggestions on how future EMI classroom practices can be improved, these studies often included the introduction of interactive tasks or group activities that promote cooperation among students. For instance, teachers may require students to work in groups for their in-class assignments or term projects, for which they will be requested to discuss their thoughts with group members, listen to the members' ideas and concerns, resolve learning problems together, and present project results to their peers. Similar findings were also presented by a study (Lin, 2018) focusing on interaction in EMI classes in the same university that this chapter bases its observations on. In Lin's study, academic subject teachers in the disciplines of engineering and business management were interviewed, and these instructors considered fostering a positive classroom atmosphere a major challenge in their EMI classes. Although lack of interaction can also be an issue in Chinese-medium-instruction classes, these EMI teachers saw creating a more interactive classroom as a way to better engage students in an environment of learning and teaching content knowledge via a foreign language.

For reasons mentioned previously, professional development programs and teaching guidelines designed for EMI teachers also encourage the use of interactive tasks such as activities that require students to work in pairs or groups. This approach is seen as a way to overcome the challenges mentioned previously (e.g., dealing with demotivated students, ensuring effective content delivery) and to create a learner-centered environment that allows students to

develop higher-level competencies such as problem-solving and negotiating skills (Fenton-Smith et al., 2017; Horie, 2017; Tsou, 2017; Tsui, 2017).

Although incorporating interactive tasks is one of the recurrent recommendations made by EMI-related studies (e.g., Chuang, 2015; Hsieh et al., 2007; Huang, 2014; Li & Wu, 2018), other research studies have indicated that interactive or discussion activities are rarely carried out in EMI classrooms, and that when they are employed, students have difficulties fully participating in them due to insufficient speaking skills or issues concerning learning styles (e.g., Chang, 2010; Chung & Lo, 2016; Fenton-Smith et al. 2017; Flowerdew et al., 2000; Hu & Lei, 2014; Huang, 2012; Joe & Lee, 2013; Kim, 2017; Taguchi & Naganuma, 2006; Tsou, 2017). Survey and interview studies have also found that teachers perceive promoting interaction or leading discussions in EMI classrooms to be a demanding and stressful task (e.g., Hu & Lei, 2014; Li & Wu, 2017). Once again, such a lack of interaction is viewed as one factor that undermines the effectiveness of EMI teaching and learning.

A review of the literature revealed that, despite much discussion in previous studies about the value of student participation and interaction in the EMI classroom, such studies were mostly focused on investigating stakeholder perceptions, reactions, or attitudes toward the role of interaction or the lack of it in various EMI contexts. Although some studies undertaken in the form of case studies have looked into actual examples of EMI course practices and offered practical guidelines for EMI curriculum design and teaching strategies (Chuang, 2015; Chung & Lo, 2016; Hino, 2017; Joe & Lee, 2013), relatively few studies have explored EMI practices from the perspectives of classroom interactive activities or the management of these activities.

Approaches to and guidelines for promoting interaction in EMI courses

Taking into account the research gap in the implementation and management of interactive activities in the EMI classroom, this section draws on the experiences of the first author, Professor Hsiou-Wei William Lin, and looks into actual EMI practices implemented in his classrooms. The section aims to offer practical suggestions and directions for conducting interactive activities and assigning collaborative tasks in the hope of improving the level of student engagement and the effectiveness of content delivery. The examples of interactive activities described below include conducting case study sessions, assigning team projects, and asking questions to engage students in the learning process.

Two points are worth noting here. First, the activities described below can be organized together as components of a main task and employed in EMI classes simultaneously. However, each activity can also be implemented individually based on course characteristics and objectives. Second, these activities, including Q&A sessions and in- and out-of-class discussions, are carried

out primarily in English. The role of the use of local students' first language in the EMI classroom will be discussed in the last section of this chapter.

Conducting case study sessions

The case study method is widely adopted by business schools around the world (Saks & Haccoun, 2019). To conduct case study sessions, teachers should include in each case a company's background, specific problems that the company encounters, and dilemmas and constraints related to the company's business operation. On the basis of such information, students are expected to observe and analyze specific firm strategies and the environment or culture in which a business operates, to propose solutions for the company, and during the process of completing the study sessions, to enhance their problem-solving and critical thinking skills, all of which are competencies deemed essential in the business management discipline.

In the author's EMI courses, case study sessions usually comprise tasks related to reading case materials, listening to briefings, answering questions raised by the teacher, and talking about personal points of view. Students are also required to participate in various team meetings, discussions, and brainstorming sessions. The instructor hopes to not only increase students' understanding of complex business logic but also improve their teamwork and communication skills through different tasks and a variety of interactive activities.

EMI teachers who wish to employ case study sessions are recommended to consider the steps and procedures shown in Figure 5.1 and Table 5.2.

Occasionally, consider replacing the above task with intra-team discussion tasks. Always circulate among groups during these discussions, offering support to students as needed. Make sure to walk around and listen in on several groups. This is necessary, for students judge the importance of the task by observing whether teachers are involved in the discussion process. Also, the duration of each team discussion should be limited to 20 minutes at most, as students easily get distracted or lose focus when the discussion lasts too long. The discussion task can be followed by a 15-minute Q&A session between the teacher and students.

If EMI teachers wish to assign one group per week to take charge of the designated case and offer its perspectives and thoughts on the set of five case questions to be discussed in the class, they are advised to adopt the methods presented in Figure 5.2 and Table 5.2.

Assigning team projects

In Taiwan, the frequent use of teamwork tasks has already been observed in management-related courses taught in Mandarin. In EMI classes, assigning team projects at the beginning of the semester can be particularly useful in that such projects allow students to explore and appreciate different perspectives

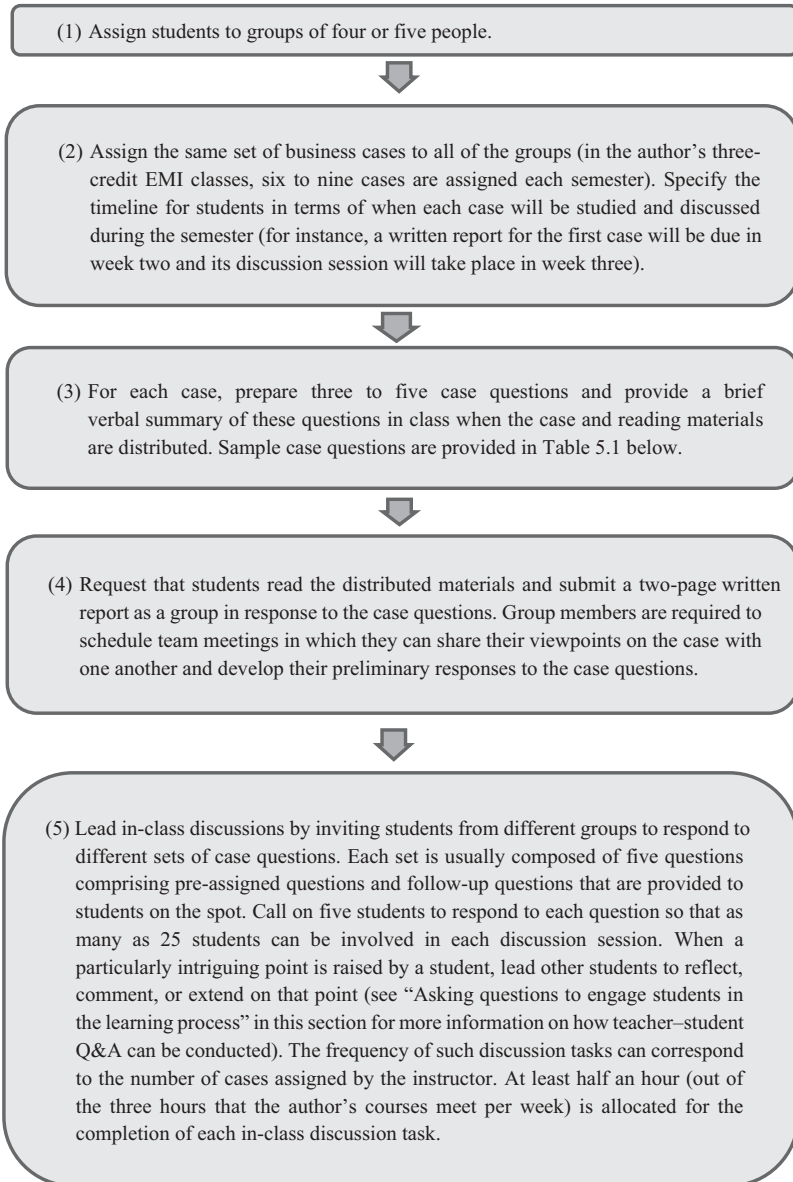


Figure 5.1 Steps and procedures recommended for conducting case study sessions.

through teamwork and interaction. The “case study sessions” described above involve elaborate team efforts. For example, students are required to submit a written report as a group in response to the case questions, schedule team meetings outside of class, and participate in classroom discussions. However,

Table 5.1 Sample case questions to be responded to in the 2-page written report

高譚市桌遊公司個案

The Gotham City Board Game Company Case

1. 為做好比較兩個專案的準備，Sean White 還需要哪些額外訊息？他該向兩專案主管問甚麼問題呢？

What additional information does Sean White need to complete his analyses and compare the two projects (Projects A and B)? What specific questions should he ask each of the project sponsors to get this information?

2. Sean White所面對兩個互斥專案中，你認為較佳的是哪一案？為什麼？

Comparing the two mutually exclusive projects under consideration by Sean White, which do you regard as more compelling? Why?

3. A方案的投資回收年數是多少？

How many years will it take for Project A to pay back the investment by the Gotham City Company?

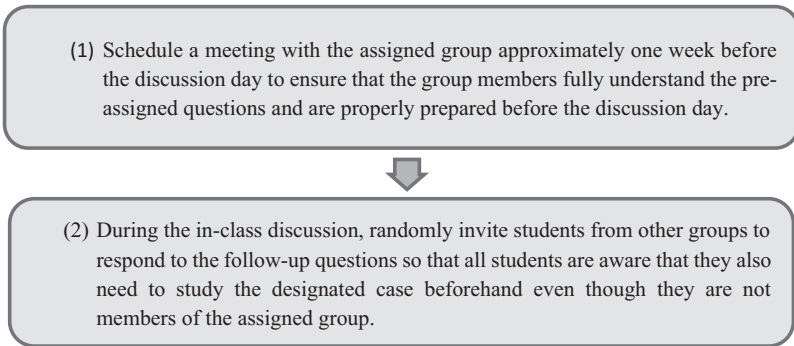


Figure 5.2 Methods recommended for assigning case discussions to specific groups.

Table 5.2 Dos and don'ts for conducting case study sessions

<i>Dos</i>	<i>Don'ts</i>
<ul style="list-style-type: none"> • Do request that students participate in team meetings and brainstorming sessions before in-class discussions. • Do conduct in-class discussions by asking both pre-assigned questions and questions that are provided to students on the spot. • Do encourage participation from the responding student as well as other students by posing follow-up questions to the responding student's answers. 	<ul style="list-style-type: none"> • Don't allow the student who is designated to answer a specific question to delegate the task to another team member. • Don't allow students to argue with one another for more than five minutes without the teacher's intervention. • Don't yield the podium to the group assigned to host the discussion session for more than 15 minutes without the teacher's posing questions or making comments.

depending on the course objectives, other types of team assignments may allow students in the EMI classroom more leeway in developing topics or conducting research. For instance, some teachers might ask students working together to create a logo for a company or to write a business plan for an enterprise, expecting that the students will be inspired by their teammates' creative ideas.

Previous studies (Johnson & Johnson, 1999; Johnson et al., 1998) have discussed the elements that constitute a cooperative group in the classroom. It has been pointed out that without proper structuring or intervention from teachers, the intended cooperative learning is likely to be replaced by a traditional setting of group learning. In such an environment, assignments are structured in ways that students are predominately assessed or ranked as individuals instead of as members of a group, which results in a lack of a shared sense of responsibility and insufficient interaction among students.

In the EMI context discussed in this chapter, traditional learning groups have often led to student complaints. When team members lack consensus on the level of commitment that should be made to the group project, team discussions can be loose and inefficient. Students not as involved as their peers are seen as free-riders, and those who are hard-working feel taken advantage of. Also, it might be difficult for EMI teachers to stay informed of the contribution made to the group project by each group member, which can also be a source of dissatisfaction from the group members who are working the hardest in the team.

Listed in Figure 5.3 and Table 5.3 are a few measures taken by the author to implement team projects in a meaningful way and to create cooperation that can motivate students to achieve project goals as a group.

Asking questions to engage students in the learning process

Teachers asking questions that elicit solutions or opinions from their students is a common classroom practice in the field of business management. Preferably, at least two questions, one being a higher-order question that probes students' understanding of the course content, should be raised in each two or three hour session. This technique helps teachers clarify important or complicated concepts for students through interaction. It also encourages students to reflect on their understanding of the course content.

Questioning students can also be a valuable method in the EMI context. Using English as the medium of instruction and learning can sometimes be taxing for both teachers and students. EMI classes, especially lecture-based ones, easily become monologic throughout the entire class time. Interaction can be rare or limited to that between a few specific students and the teacher. Calling on students to participate in Q&A sessions thus allows teachers and students to take a break from the instructor-dominated lecture format and creates opportunities for interaction and student participation.

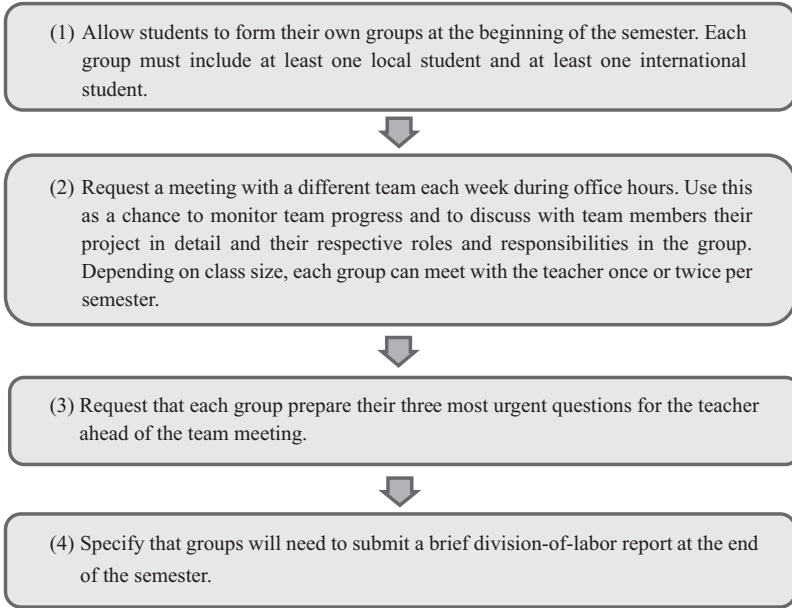


Figure 5.3 Steps and procedures recommended for implementing team projects.

Table 5.3 Dos and don'ts for assigning team projects

<i>Dos</i>	<i>Don'ts</i>
<ul style="list-style-type: none"> • Do request a meeting with a different team each week during office hours. • Do specify in the <i>syllabus</i> that groups will need to submit a brief division-of-labor report at the end of the semester. • Do assess or rank students' performances on the team project based primarily on their performances as members of a group instead of as independent individuals. 	<ul style="list-style-type: none"> • Don't allow students to form groups that consist of only local students or international students. • Don't ignore students' complaints about free-riders on their teams or depend on students entirely to resolve group conflicts all on their own. • Don't allow a team presentation or discussion to become a one-person show.

More specifically, EMI teachers may adopt a cold-calling strategy and randomly appoint students to offer their opinions to prevent the familiar situation of the majority of students never raising their hands or responding. Such a strategy serves the purpose of stimulating student involvement and enhancing the quality of interaction in the classroom (Dallimore et al., 2013).

Its effectiveness, nevertheless, often depends on how teachers implement the questioning task and how student responses are followed up by teachers or fellow students.

For cold-calling to function properly, EMI teachers are advised to consider the measures presented in Figure 5.4 and Table 5.4.

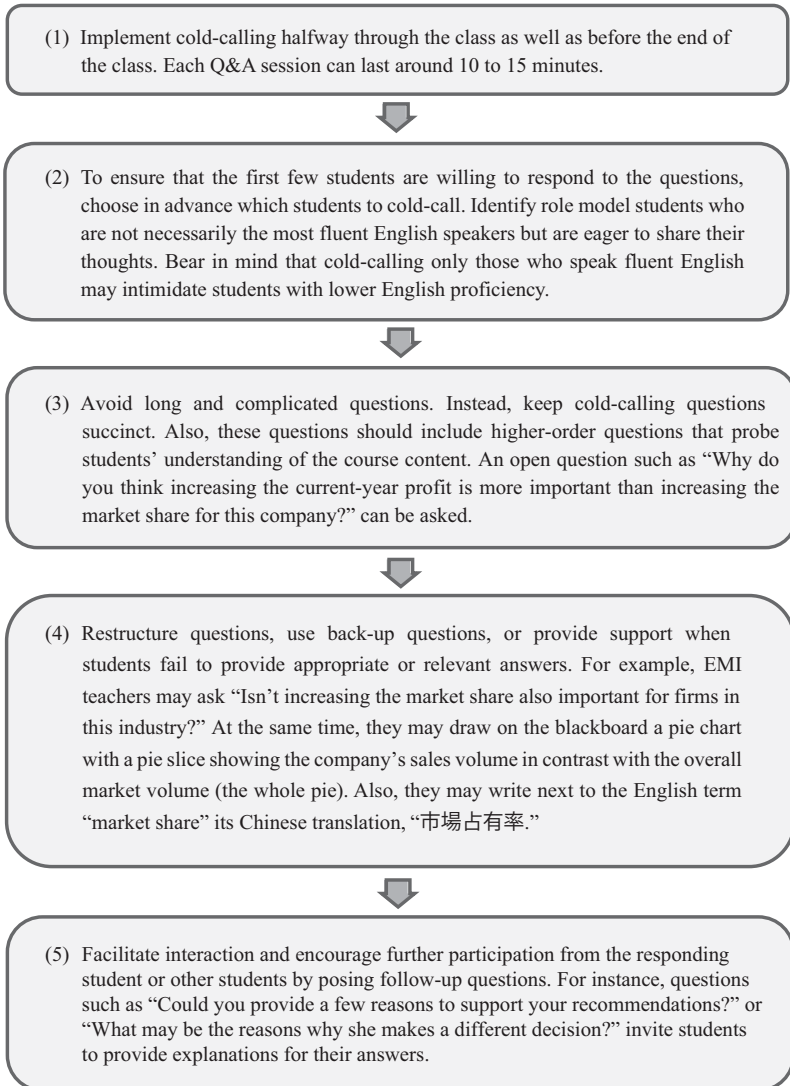


Figure 5.4 Steps and procedures recommended for implementing cold-calling strategy.

Table 5.4 Dos and don'ts for asking questions to engage students in the learning process

<i>Dos</i>	<i>Don'ts</i>
<ul style="list-style-type: none"> • Do implement cold-calling halfway through the class as well as before the end of the class. • Do restructure questions or use back-up questions when students, especially those with limited English proficiency, fail to provide appropriate or relevant answers. 	<ul style="list-style-type: none"> • Don't ask long and complicated questions during in-class discussion. • Don't limit the interaction to that between a few specific students and the teacher.

Discussion

As mentioned previously, ensuring student engagement by increasing interaction has become a shared concern for EMI teachers despite the unique challenges and issues of each EMI context. Interactive activities such as discussion tasks are considered by researchers and EMI teachers to be teaching techniques or strategies that promote class participation and enhance the effectiveness of EMI courses. Below are a few considerations and issues worth thinking about when employing the three approaches provided in the preceding section.

First of all, the above approaches are generally applicable to EMI courses at both the undergraduate and postgraduate levels. One reason is that the Master's-level programs in the fields of business and management are often focused on practical knowledge and skills rather than academically-oriented curricula. Bennis and O'Toole (2005) stated that some of the most difficult questions facing business managers may be broad as well as multifaceted and do not lend themselves to scientific experiments or validation. They provided examples of managerial questions such as: "What impact does a culture of celebrity have on leadership?", "How should a CEO be compensated?", "How should global operations be designed to be effective and equitable?", and "What purposes does a corporation have beyond the creation of shareholder value?" Another reason is that these Master's programs in general accept more students than do their counterparts in other disciplines. In the case of the university reported on in this chapter, each of its five full-time MBA programs operated by five different departments on average register 40 to 60 students each academic year. For the majority of these students, the MBA serves as a terminal degree. Most business graduate students do not plan to pursue a doctoral degree after graduation. For these reasons, the characteristics of Master's-level EMI courses in the colleges of management in principle resemble those of undergraduate ones. Nevertheless, it is advisable for teachers to consider the instructional objectives and learning goals

of their EMI courses when determining their classroom practices because the implementation of EMI can be highly contextualized (Macaro et al., 2018).

Second, regardless of the type of interactive activities that EMI teachers adopt, it is suggested that the teachers communicate clearly to their students the goals and expected outcomes of the activities (Horie, 2017; Lin, 2018). Taking the assignment of team projects as an example, students should be informed at the start of the semester that task completion will require collaborative effort, such as holding team meetings before discussion sessions and gaining an understanding of the assigned business cases by responding to the guiding questions in written form. Students should also be made aware that all team members will need to take part in class discussions and be prepared to answer questions during the Q&A sessions following the discussions. Making the course expectations clear to students enables the students to better engage with each step of the activities they undertake in the classroom.

Third, in the process of approaching activity goals, both monitoring and intervention from EMI teachers are required to provide students with guidance and to ensure that the assigned interactive or collaborative tasks indeed support the intended purposes (Hsieh et al., 2007; Tsou, 2017). Continuing the example of assigning team projects, teachers taking time out of their office hours to meet with each team at least once per semester is recommended so that any issues that might affect or disrupt teamwork can be detected and resolved in a timely manner. Conducting case study sessions is another example where monitoring and intervention are critical to the successful implementation of interactive activities (Esteban & Cañado, 2004; de Prat, 2020; Northcott, 2007). In these sessions, not only do teachers initiate topics and frame the discussion around key issues, but they also need to manage the interaction process by intervening as necessary to make sure that all points of view and perspectives most relevant to the topics are raised and covered.

Next, although English is the dominant language and the activities are almost always conducted in that language in the EMI context discussed in this chapter, EMI teachers should acknowledge the importance of allowing some flexibility in adopting students' first languages in accordance with teaching and learning needs. Just as the choice by EMI teachers of whether to use interactive classroom activities should be based on course objectives, the choice of whether to incorporate first languages in EMI classes should be in line with instructional objectives and learning goals (Li & Wu, Chapter 7). For example, Mandarin Chinese is used in the first author's EMI classes to provide students with guiding questions or discussion prompts in both Chinese and English (see Table 5.1). Since these questions and prompts are meant to offer students direction in investigating the business cases assigned in class, having them available in both languages facilitates students' grasp of the questions and the discussion process. Another example is that, to ensure comprehension, the instructor responds to student questions or provides

explanations in English while simultaneously writing on the blackboard the Chinese terms corresponding to the relevant English terms.

Lastly, inadequate support or resources for EMI instructors, such as the lack of professional development programs, has been identified in the literature as one of the main challenges facing EMI implementation (e.g., Coleman, 2006; Kim, 2017; Macaro, 2015; Wilkinson, 2012). In light of the instructional practices of the discipline of business management, this chapter would like to point to the scarcity of local business cases written in English as a problem specific to the English-based courses or programs in the business management field. As discussed earlier, case methods of learning are a core component of business education. In Taiwan, there are cases written by university professors discussing the operations of domestic firms. Yet these cases are mostly written in Chinese and therefore rendered unavailable for use in EMI courses. While EMI teachers have the option of using business cases produced by North American institutes, these cases are insufficient to help students understand the perspectives of Taiwanese or ethnically Chinese business managers. Chamorro-Premuzic and Sanger (2016) stated that although the core ingredients of business leadership are universal (e.g., good judgment, integrity, and people skills), the full recipe for successful leadership requires culture-specific condiments. Namely, the absence of local cases in EMI classes deprives both international and Taiwanese students of opportunities to gain insights into the operations of Taiwan- or Asia-based enterprises. Considering the increasing prevalence of EMI in the fields of business and management, the need for translation or production of local business cases is pressing. A comprehensive plan to accumulate such business cases is recommended for inclusion in the development of overall college-level EMI policies. Only then can sufficient resources be allocated to support the production of local cases written in English, which is beneficial in creating a more balanced and diverse learning agenda.

Conclusion

In the discipline of business management, the well-established status of English as the lingua franca across academic and business areas renders it an obvious choice for the medium of instruction for universities wishing to internationalize their business-related programs and recruit overseas students. As with the EMI courses offered by other areas of study, issues concerning classroom interaction and student engagement have remained a constant source of worry and frustration for both subject teachers and students. EMI teachers in the business management field might be facing challenges that are specific to their discipline, such as leading case studies in a heterogeneous classroom, but because of these circumstances, they also have the advantage of an enriched approach to conducting English-based courses, wherein the language is used by students as an international language across a range of interactive activities. With proper planning and preparation, academic subject teachers who

are tasked with the responsibility of transmitting professional knowledge in English have the opportunity to enhance interaction and collaboration in their classrooms so that teachers can motivate students more effectively and students can engage with learning goals more actively.

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6 The use of English in linguistics classes

When and how do we do it?

*Miao-Hsia Chang and Li-Hsin Ning*¹

Introduction

Recently, there has been a rapid increase in programs encouraging the use of English as a medium of instruction (EMI) in higher education (HE) in non-anglophone countries (Bolton & Kuteeva, 2012; Galloway et al., 2017; Kuteeva & Airey, 2014; Macaro et al., 2018). Described as a “pandemic” (Chapple, 2015, p. 1), EMI reflects the government’s urge to boost technological development and globalization of the economy, as well as to promote “educational internationalization.” Almost inescapable from this trend, universities in non-anglophone countries are offering more and more EMI programs to attract international students and to attain higher university ranking (Jensen & Johannesson, 1995; Kim, 2017; Kirkpatrick & Bui, 2016; Kuteeva & Airey, 2014; Macaro et al., 2018; Manakul, 2007).

Despite the global drive to implement EMI programs in universities, concern has been raised among stakeholders about their negative effects, such as the threat they pose to local languages (Bolton & Kuteeva, 2012, p. 431; Chang, 2018; Galloway et al., 2017, p. 6; Her, 2018b; Lai, 2018; Li, 2018; Yeh, 2018); the impact they have on the political, socio-linguistic, and economic stability and development of the country (Manh, 2012, p. 97); the longer time needed for instructors to prepare course content; and above all, the oversimplification of input to accommodate student language proficiency, especially of specialized disciplinary knowledge. Accordingly, the challenges and problems that students face include language issues such as difficulties in understanding the instructor’s lecture, lack of ability to express themselves or ask questions, and the need to switch between their first language (L1) and the second language (L2). This can result in students being resistant to participation in EMI and a possible increase in the dropout rate (Airey, 2011; Chang, 2010; Chern & Lo, 2017; Hou et al., 2013; Galloway et al., 2017, pp. 6–7; Jensen & Johannesson, 1995; Kim, 2017; Manakul, 2007; Wu, 2006; Yeh, 2013). Especially noteworthy among these problems is a lack of ability among students to “express oneself with nuance and precision,” referred to as “domain loss and capacity attrition” by Kuteeva and Airey (2014, p. 536). In spite of the increasing studies questioning the adequacy of a unilateral

implementation of EMI across disciplines (Bernstein, 1999; Kuteeva & Airey, 2014; Lindblom-Ylänne et al., 2006), little is known about the effect of EMI in HE in Taiwan (Chung & Lo, 2016, 2017; Huang, 2018; Yeh, 2013). One of the disciplines where EMI is widely used in this context is the discipline of linguistics. The present study aims to explore the implementation of EMI in linguistics programs in universities in Taiwan. Before we present the research questions, a brief description of the linguistics discipline in Taiwan is provided in the following section.

Linguistics is a rigid scientific study examining the use of language with well-defined data and methodology. It views language as a socialized behavior with “regularity of configuration and tendency... as real as the regularity of physical processes in a mechanical world” (Sapir, 1929, pp. 213–214). Core fields of linguistics include syntax, phonetics, phonology, morphology, and semantics. Related to these core fields are sociolinguistics, psycholinguistics, neurolinguistics, computational linguistics, language acquisition, and discourse studies. Linguistics can therefore be regarded as a scientific study because the argument is based on empirical evidence of data or experimental results. It also belongs to the humanities as it explores language as a kind of human behavior. In terms of Neumann et al. (2002) classification of knowledge-making practices: pure soft, applied soft, applied hard, and pure hard, we can thus place linguistics in the category of “applied soft” while sometimes closer to applied hard when computational or mathematical knowledge is involved, as schematically represented in Figure 6.1 below (the author’s own figure).² With these epistemological features, potential tensions may arise due to the variability of knowledge involving linguistics.

In universities in Taiwan, linguistics is mainly rooted in departments of local or foreign languages, in particular, those of English (language) studies, where linguistics has regularly been a required subject and where English is regularly employed as the instruction language. As linguistics is closely related to implementation of EMI inasmuch as it commonly involves cross-domain knowledge, in this study, we take an insider’s view by investigating EMI in linguistics programs in Taiwan. The following research questions are addressed:

- How is EMI implemented in linguistics courses embedded in Departments of English in universities in Taiwan?
- What attitudes do the professors and students from linguistics programs take toward EMI?

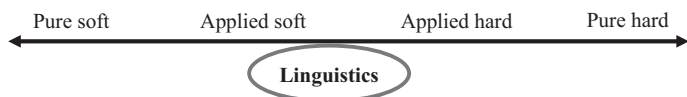


Figure 6.1 Linguistics and disciplinary categories (based on Neumann et al., 2002).

- Is EMI beneficial to the students? If yes, what have students learned in the EMI courses? If not, why?

The organization of this study is as follows. First of all, we provide an overview of English education in Taiwan. Then we review EMI in the disciplines of hard sciences and soft sciences. We report on the questionnaire results of linguistics professors and present the results of interviews with linguistics MA students. Finally, we discuss the findings and conclude this study.

English education in Taiwan

In common with the global trend of placing English education at the forefront of the globalization and modernization drive, since the early 1990s, the government of Taiwan has been making efforts to enhance the English ability of its people. In 2001, after the new government took power, English, which had long been a required subject in the high school curriculum, became a mandatory subject in elementary schools.³

In recent years, as different Asian countries have been more actively engaged in the implementation of large-scale EMI, the Taiwanese Government has been considering adopting English as a second official language (ESOL). In response to a piece of headline news from a leading newspaper in Taiwan (Lin, 2017) that Taiwanese students have fallen behind its neighboring countries in terms of TOEIC scores and a legislator's interrogation at the Legislative Yuan regarding local people's poor English proficiency, two days later, on October 14, 2017, the Ministry of Education (MOE) established the "English Promotion Committee" to evaluate the viability of adopting ESOL. A recent national survey conducted by the Committee, however, showed that there has actually been a gradual increase in local people's English proficiency between 2002 and 2012.⁴ Given the results, a press release was issued by the MOE (Central News Agency, 2018), stating the government's current position on national English education:

- 1 No timeline is set for ESOL.
- 2 To facilitate effective English learning, a more supportive environment must be provided.
- 3 Accordingly, the government will partially relax the ban on bilingual education allowing for the gradual inclusion of bilingual classes and enhancing teaching training programs.

While the government has been engaged in a nationwide English promotion campaign, research has demonstrated both the positive and negative effects of EMI on learning. At the national level, linguists have voiced their grave concern over the impact of ESOL on the survival of the vernaculars (Taiwanese Southern Min, Hakka) (Tiun, 2013) and of the minority languages (Chang, 2018; Her, 2018a; Lai, 2018; Li, 2018; Yeh, 2018). The positive effect mainly involves improvement in language skills (Chang, 2010; Chern &

Lo, 2017) or exposure to global views or international culture (Wu, 2006). The disadvantages, on the other hand, include difficulties in understanding content knowledge, difficulties in expressing oneself in English (Wu, 2006), unchallenging input (Huang, 2018), and lack of motivation in learning (Wu, 2006; Yeh, 2013). Due to the controversy involving EMI in the teaching and learning of specialized knowledge, in the following section, we provide a more detailed review of EMI in different disciplines.

EMI in different disciplines

In his analysis of the dynamics of social class, Bernstein (1964) distinguishes two types of language codes that characterize different social classes: restricted codes and elaborated codes. Restricted codes are structurally more predictable, involving everyday knowledge, and are typical of the language of the working class. Elaborated codes are structurally less predictable, require more planning, and have the main purpose of delivering “relatively explicit meaning” (p. 65). According to Bernstein (1999), the modalities of the elaborated codes are what underlie the principles of pedagogic transmission and acquisition in education. Since disciplinary knowledge focuses on transmission of specialist knowledge, elaborated codes are the main type of language used in educational settings.

A survey by Bolton and Kuteeva (2012) also called for distinction among disciplines in EMI practice. Involving 668 staff members and 4,524 students across different disciplines in Swedish universities, the study showed that there was a higher proportion of English at the graduate than the undergraduate levels. As for disciplinary difference, English is used more frequently in sciences than humanities. The use of English poses greater challenges for humanities such as literature. These findings are consistent with Kang and Park (2004), whose study found that professors were opposed to EMI expansion in liberal arts classes although they were more positive to EMI in other areas. A further study by Kuteeva and Airey (2014), which focused on the parallel language policy by the Swedish government⁵, demonstrated similar results. The social sciences, however, presented a more diverse picture. Some disciplines are closer to the natural sciences “both in the way they construct knowledge and perceive the role that language plays in the process” while others are closer to humanities. For example, in sociology, where language is used to describe “social reality,” it is difficult for one to use English to express ideas in Ph.D. theses with “depth and analytical precision” unless the authors are very competent in English (p. 544). The findings agree with an earlier study on EMI in Finland and the UK (Lindblom-Ylänne et al., 2006).

Studies in non-anglophone countries in Asia have also called for the need to address disciplinary variation in EMI. In Byun et al. (2011) survey of five university professors and 20 students in Korean universities, the level of students’ satisfaction score about the effect of EMI from 2006 to 2009 ranked from Business School to College of Engineering, College of Nursing, and College of Science

in descending order. The dissatisfaction was related to a number of factors. For example, many students found the English lectures hard to follow because of their poor English language abilities. Furthermore, both the students and professors revealed that the professors' limited English proficiency resulted in simplification of the input of knowledge. In fact, both the students and professors questioned the adequacy of compulsory EMI or implicitly resisted it. In this light, Kim et al. (2018) supported the use of local languages to teach humanities, through which students can not only achieve greater subject literacy, but can also become more skillful communicators in "intercultural encounters," such as in telling jokes or in giving summaries. In short, all these studies conclude with the suggestion that the administrators have proper preparation and enough human and non-human resources before a compulsory EMI policy is enforced.

Lei and Hu (2014) investigated the English-related affect and perceptions of EMI programs in Business Administration at a university in China. The results indicated that EMI does not produce a positive effect on students' proficiency or on their language learning and use because of both the students' and the instructors' poor language ability. The students' prior English proficiency, however, is positively correlated with their degree of satisfaction while negatively correlated with their level of anxiety when using English inside and outside the classroom. The finding again suggests that proficiency is an important factor for success in EMI.

Research in the Taiwanese context has been concerned with EMI practiced in the disciplines of management, engineering, and business. Chung and Lo (2016, 2017) discussed the curriculum development of EMI in the Department of Transportation Management. While students in this department are more motivated to learn English because of the job market, the findings propose an adaptive approach allowing for code-switching in class (see also Yeh, 2013), consideration of students' proficiency, respect for teachers' choice of language in the classroom in teaching content courses, and professional development of EMI teachers. A similar concern was raised in Chang's (2010) survey on students' attitude toward EMI across the disciplines of engineering and management. It was suggested that students' and instructors' English proficiency be taken into careful consideration in EMI practice.

In applied hard sciences, Hsieh (2007) conducted interviews with nine professors and made a comparison of an EMI course (18 students) and a Chinese-medium-instruction (CMI) course (47 students), both in Engineering Graphics. The instructors revealed that students were less responsive in EMI courses so that they needed to switch to Chinese or slow down their lecture. In addition, the students' proficiency affected the efficacy of the instruction. Some of the participants also questioned the necessity of EMI in content courses for professional knowledge, suggesting that English should be learned in postgraduate years since the purpose of instruction was to teach professional knowledge. As for the comparison between the CMI and the EMI courses, EMI was *not* found to be a more conducive approach. Instead, it may even have brought about negative effects with regard to professional

development. As for the positive effects of EMI, both the students *and* the professors benefited from the EMI courses in terms of their language ability. For students, the training with PowerPoint presentations better prepared them for international conferences. The instructors also felt that their English had improved through the instruction. However, it should be noted that that students' positive response may be attributed to their past learning experience, having taken more EMI courses before, and their motivation for learning in English. Besides, the EMI class had a much smaller number of students. Whether the results are conclusive is yet to be further explored.

Huang (2018) investigated the learning experiences of four students from the College of Commerce in a university in Taiwan. As recalled by these students, the inclusion of international students forced the instructors to simplify the input, which was thus non-challenging to local students and greatly reduced their learning motivation. Concerning the style of teaching, though not directly related to whether the course was in EMI or CMI, a dialogic mode which involves interaction between the instructor and the students and illustration with examples which elucidate abstract concepts are preferred by the students than a monologic one. In sum, the author called for "learner agency" and further study on "potential learner resistance in EMI practices" (p. 435).

The review above raises a number of issues that are worth the attention of EMI researchers and stakeholders. First, and most important, disciplinary knowledge needs to be addressed in EMI practice. A second noteworthy point is that the appropriateness of EMI practice differs across disciplines in different language areas. Third, as noted above, the instructors' English proficiency, irrespective of discipline, is an important factor for the input to be comprehensible. Since content knowledge learning is the main purpose of disciplinary knowledge instruction, unless the class is composed mainly of international students, whether it is necessary to force professors without sufficient English proficiency to practice EMI remains a contentious question. Equally important is the students' English proficiency, which is in proportion with the satisfactory degree of EMI. While the above points operate under the assumption that EMI should take priority over CMI in teaching disciplinary knowledge, in this paper, we argue that complete input of specialized knowledge by instructors should take precedence over the learning of language or globalization, especially given the finding that EMI is mainly beneficial to language development rather than to complete learning of disciplinary knowledge.

In the following section, we present the results of our survey of EMI in linguistics. The results of questionnaires to the linguistics professors surveyed are presented and discussed. They are then compared with the students' responses in the later section.

Questionnaire for linguistics professors

An off-line questionnaire containing both close-ended and open-ended questions was designed to investigate how EMI has been implemented in

linguistics courses from the viewpoint of linguistics professors (see Appendix 6A). Sixteen professors from four national universities in Northern Taiwan participated in this study. The professors are experienced instructors of both general English and linguistics courses. They are all competent English speakers and writers. Most of them received their PhD in an English-speaking country and their major publications were written in English.

The survey aimed to address the following issues: (1) What language(s) is used in class; (2) whether CMI or EMI or mixed language is the appropriate method; (3) what the optimal grade level is for a given instruction language; (4) when the appropriate circumstance is for a given instruction language; (5) how language choice is related to field knowledge; and (6) instructors' views on EMI. Specifically, in the first part of the questionnaire, we inquired about the courses the professors taught, the proportion of time allotted to CMI and EMI, and the optimal timing for using EMI in each individual course (see the background information section in Appendix 6A). In the second part, we asked about the precise circumstances (i.e., lecture, comment, discussion, presentation, or exam) in which EMI would be used. In the third part, the questionnaire asked the professors to self-evaluate the effects of using EMI. They had to rate their level of agreement with the assertion that using EMI increased students' professional knowledge and promoted students' English ability. Finally, an open-ended question was provided for the professors to share their opinions on EMI.

The appropriate proportion of time for EMI in linguistic courses

The linguistics teachers used EMI slightly more in their undergraduate courses (64.18%) than in their graduate courses (62.13%). However, three of the sixteen teachers pointed out that they should decrease the amount of time that English is used in the linguistics courses, particularly for undergraduate students (cf. Kim, 2017). They argued that the linguistic content is challenging for most of the undergraduate students, because they had never learned linguistics as a subject in high schools. The knowledge in this field is new and abstract. Data analysis requires training in logical thinking. Therefore, Chinese would be a better medium of instruction. The following response reflects the opinion of a professor teaching undergraduate linguistics:⁶

(1) I feel that the more abstract or theoretical the discipline is, the less appropriate EMI is. Take Introduction to Linguistics and Formal Semantics. The former contains concrete concepts and examples, making it easier to learn, whereas the latter contains more abstract terms and logic symbols. I believe that using mother tongue in learning logical inference would be beneficial... If using mother tongue can help students to learn abstract or complicated concepts and answer students' questions, then I don't think we have to insist on EMI.

(Professor #3)

As for the optimal timing for EMI to be implemented, the linguistics teachers claimed that juniors or above (ideally the graduate level) would be the better time. This suggests that EMI might not be of great help to beginners in a field when developing content knowledge is more important than improving English listening skill. As will be shown in the following section, the difficulty level of the course content is a factor for students to determine what the preferred instruction language is.

Under what circumstances was EMI used?

The circumstances where EMI has been used included three parts: *lecture*, *discussion*, and *students' performance*. First of all, during the *lecture*, while English is used in elaborating basic concepts, discussing English examples, and addressing linguistics jargon, Chinese is the primary instruction language in explaining complex or new concepts, discussing Chinese examples, and demonstrating linguistic analysis. As mentioned in two teachers' responses in (2–3) below, using EMI may not be effective in helping students acquire professional knowledge. Moreover, the teachers often had to translate the content into Chinese, leading to schedule delay (cf. Hsieh, 2007). Without considering students' level of understanding, using EMI in class could even deteriorate learning performance.

(2) I think how much knowledge students can absorb has to do with whether they understand the lecture. In our graduate program, since not all the students are English majors, using EMI in class is not effective. Teachers typically have to use Chinese to explain complicated content. This can lead to schedule delay and does not help students at all.

(Professor #6)

However, there were professors who maintained that language is just a medium. What is more important, reflected one teacher in their response (3) below, is the teaching style, that is, how to simplify difficult content in a way that students can easily understand.

(3) I think language is just a medium. Whether students can acquire knowledge has nothing to do with instruction language but with how teachers can elaborate the knowledge in a clear way. I have seen teachers teaching in Chinese; however, the students still cannot catch the idea.

(Professor #7)

During the in-class *discussion*, English is typically used when the issues are related to the textbook content. Nonetheless, Chinese serves as the main instruction medium when local issues, mathematical reasoning, or inferential processes are involved. As will also be demonstrated in the following section,

the teachers' responses (4–5) below agree with the students' report about their preferred language in different courses.

As for students' *performance*, final projects are required to be presented orally in English along with English slides or handouts. Students are encouraged to answer questions in English, but are allowed to use Chinese when necessary. As for the written papers and exams, English is mandatory. In other words, most of the linguistics teachers agree that students' presentations (either written or oral) should be presented in English, as English proficiency is also a requirement in the department:

(4) Because linguistics is placed in the Department of English, students have to fulfill the requirement of English proficiency. Therefore, students have to use English to present and write their theses. As for instruction language, because the goal is to help students acquire linguistics knowledge and complex concepts, teachers may consider using Chinese. As for assignments and oral presentations, English is required for the sake of language training.

(Professor #5)

(5) Additionally, as to whether final projects should be written in English, my opinion is it depends on course objectives. The courses offered in the Department of English require students to acquire English writing and academic abilities. However, for non-English majors, I would let them choose to present and write presentations in either Chinese or English.

(Professor #4)

In the questionnaire, we particularly asked the teachers to rate whether they agreed that using EMI in linguistics courses would help students increase their linguistics knowledge or improve their English ability. Most of the linguistics teachers held a moderate opinion on whether EMI would be valuable for obtaining professional knowledge (rating score: 2.938 on a 5-point scale, where 1 means strongly disagree and 5 means strongly agree). Even if these professors were competent English speakers, in general, they tended to have reservations about the positive correlation between EMI and learning of content knowledge. On the other hand, most of them agreed that using EMI could boost students' English ability (rating score: 3.813 on a 5-point scale where 1 means strongly disagree and 5 means strongly agree). When English is used, students may pay attention not only to the core content but also to the language use. This may help them fulfill the language proficiency requirement for obtaining the degree.

The findings reported above reflect the linguistics instructors' view toward a moderate approach to EMI. That is, mandatorily implementing EMI without considering the essence of a subject can do harm to HE. English training is incorporated into English textbook readings, oral presentations,

exams, and written term projects, where students build up their subject knowledge and English ability simultaneously. Therefore, the lectures or in-class discussion in HE should aim at ensuring that the students have full understanding of the content instead of training the students to comprehend the instructor's English. The results give further credence to Engelbrecht and Wildsmith's (2010) view on the complementary use of the mother tongue and the target language for instruction of disciplinary knowledge.

So far, we have presented a quantitative and qualitative analysis of linguistics professors' opinions toward the use of EMI. In the next section, we discuss the results of interviews with linguistics majors to see whether students hold the same attitude toward EMI.

Interviews with linguistics MA students

Seven linguistics majors (three in their second year and four in their third year of the graduate program) participated in the interviews undertaken between May and July, 2018. Before these interviews, all the respondents were informed of the research purposes and agreed to be audio-recorded.

The following issues were addressed in the interviews: (1) the strengths and weaknesses of CMI and EMI in linguistics classes; (2) the appropriate time to use CMI and EMI in linguistics classes; (3) whether students have benefited from CMI or from EMI; and (4) whether students have improved their language skills or content knowledge if EMI is beneficial.

All the participants were English majors in college and had taken at least one introductory linguistics course in college using English textbooks. By the time of the interviews, they had taken eight to ten MA linguistics courses, about half of which were conducted in English. In addition, the students were required to pass the High-Intermediate level of the General English Proficiency Test (GEPT), a Taiwan-based standardized English test, before receiving their MA degree. According to the GEPT rubrics (Appendix 6C), these students were further classified into three proficiency levels (see Table 6.1 below).⁷

All the interviews were conducted in Chinese and recorded. On average, each interview lasted between 20 and 40 minutes. The following seven open-ended questions were asked in the interviews given the research objectives listed above.

Table 6.1 The participants' English proficiency levels according to GEPT rubrics

<i>English Proficiency Level</i>	<i>Students</i>
Advanced	S1, S6, S7
High-Intermediate	S3, S4
Intermediate	S2, S5

- When should English be used in the linguistics courses?
- If you think Chinese should be used in the linguistics courses, when should it be used?
- What content knowledge do you benefit from in the English instruction?
- Did you improve your English skills through the EMI courses? If yes, what are they? If not, why?
- What other things did you learn from the EMI courses?
- What are the disadvantages of using English for instruction?
- What are the disadvantages of using Chinese for instruction?

The interviews were then fully transcribed for a thorough qualitative analysis. In the following, we present the students' responses addressing the above questions. The discussion focuses on two central issues: (1) the appropriate language to be used to achieve optimal results in linguistics instruction; and (2) if students are positive about EMI, what other knowledge they have learned from such instruction?

When should English be used?

Most respondents agreed that English is the preferred medium when the learning materials are in English. Since the arguments in the textbooks are in English, using Chinese may cause comprehension breakdown for some advanced students (e.g., response 6). In particular, at the lexical level, when technical terms and related concepts are mentioned, English is preferred, even to lower-level students such as (7) below:

(6) We initially thought that using Chinese in the lecture would facilitate our understanding, particularly for the subjects we did not have much background knowledge about. However, this was not the case. The fact is that you had to do the complex translation between Chinese and English because the teacher lectured in Chinese but you read the teaching materials written in English. This in fact made the learning less efficient...
(S1, Advanced)

(7) Sometimes translating English technical terms into Chinese makes them difficult to understand. If you read the English text, you can understand it without difficulty. I had one course presentation where [the technical terms] were uttered in English but all other content was reported in Chinese. I felt that I couldn't express the ideas clearly.
(S2, Intermediate)

One student related the use of English to later practice in writing:

(8) He [the instructor] used English to provide some examples. This helped me with academic writing because I only had to paraphrase what he said.

If he had used Chinese, then I would have had to translate it myself. I would have had no idea whether the translation was correct. Anyway, it requires an additional step.

(S1, Advanced)

When should Chinese be used?

There were several situations when students thought Chinese should be used instead. First, when the course materials are in Chinese, Chinese should be used in instruction:

(9) I think a better way is to use Chinese both in the slides and in the presentation. The consistency should make the presentation smoother.

(S2, Intermediate)

In addition, most of the interviewees agreed that the proportion of Chinese used is dependent on the degree of students' familiarity with the linguistics knowledge involved. This is particularly true among less proficient students. The courses which require more Chinese instruction include Syntax, Phonology, Corpus/Computational Linguistics, Statistics, and Neurolinguistics. Overall, the students' attitude is congruent with the linguistics professors' report about the proportion of Chinese used. As stated above, these courses involve more knowledge related to the hard sciences (e.g., Phonology, Statistics, and Programming Languages) which have the characteristics of methodological rigor (e.g., Statistics), highly integrated and organized ideas (e.g., Phonology), a high degree of cumulateness of knowledge development (e.g., Corpus/Computational Linguistics), mathematical derivations or logical reasoning (e.g., Programming Languages), or strong theoretical basis for understanding (e.g., Phonology). Responses related to content where CMI is preferred include the following. Note in (10) that teachers would normally switch to Chinese when they found that the lecture was unintelligible to students:

(10) Like in Corpus Linguistics, the instructor lectured in English and the students spaced out. The instructor then translated it into Chinese, and the students got the idea. It was not a good idea to use too much English, because the students had no background knowledge about the subject.

(S6, Advanced)

(11) [This subject] put great emphasis on logical thinking. You learned how to exclude A or B [based on some criteria]. If this lecture was delivered in English, [I] don't think [the students] would have been able to understand it.

(S6, Advanced)

Third, when the instructor has limited English proficiency, the quality of the instruction may be greatly impaired (see also Byun et al., 2011; Lei &

Hu, 2014; cf. the review section of EMI in the disciplines of hard sciences and soft sciences). While such a problem does not exist in the focal university investigated, a student's recall of an EMI course taken at another school previously reveals the importance of instructors' English ability. In that course, the teacher's poor pronunciation and strange intonation had seriously affected the student's comprehension and disrupted the flow of the lecture:

(12) I was taking courses at KT, and some instructors lectured exclusively in English, too. To be honest, I was easily distracted [in those courses] because of the instructors' weird pronunciation. The intonation was a bit awkward, so I got distracted easily. [I felt that] I was wasting time trying to comprehend the teachers' English and I learned nothing from the lecture. So, I'm thinking that if we would like to implement EMI, the instructors' English will be a key concern. Otherwise, students might have no idea of what the teachers are talking about.

(S3, High-Intermediate)

Equally important is the students' English proficiency (Byun et al., 2011; Chang, 2010; Chung & Lo, 2016; Hsieh, 2007). At least two interviewees, who were less proficient and less confident students, revealed that when the professor was teaching a difficult concept or asking them questions, they would not raise hands to clarify an unclear point or they would shun participation in discussions because they were afraid of making mistakes when speaking English (cf. Martirosyan et al., 2015, on the relation between proficiency and academic performance). The following response illustrates the influence of students' proficiency and confidence on class performance:

(13) As an English-major, communicating in English is the basic ability. There is no problem for me to use English in general. However, the graduate courses are tough. The English papers are difficult to understand. Many courses are lectured in English. Sometimes I don't know whether I should blame myself for not having good English to understand the content or whether the papers are way too difficult. If I have to ask the questions in English, I'm afraid I would embarrass myself. It may sound like I can't keep up because my English is too bad. On the other hand, I don't know what questions to ask because I'm completely lost in the reading. Without some basic understanding of the content, I can't make a precise question that the instructor would be able to understand. I can't judge whether it is a good question. I have no confidence. So, I typically discuss with my classmates after class.

(S4, High-Intermediate)

From the interview responses discussed so far, it can be seen that in terms of learning of professional knowledge, even English majors sometimes find it difficult to understand content knowledge in a whole-English environment.

However, with the materials written in English and past training of linguistics in English, pure Chinese may not be the best policy either. A tactful switch between English and Chinese according to the difficulty level of the subject knowledge may be the best policy.

Do students improve their English skills through the EMI courses?

Almost all the interviewees indicated that they had improved their English listening, speaking, reading, or writing skills (Chang, 2010; Chern & Lo, 2017; Wu, 2006, reviewed by Chern & Lo, 2017, p. 115). In particular, by imitating the instructor's English such as correct pronunciation of linguistic terms, transition words used to mark different topics or flow of discourse, expressions used to paraphrase or explain a complex concept, or the logical ways of presenting ideas, the students revealed that they had honed their English-speaking skills. The constant exposure to English also enhanced their listening comprehension. Furthermore, through extensive reading in English, their reading speed was also increased. In terms of writing, the instructional language provided important input for students to use more precise language. The following responses (14–16) illustrate the complex cognitive activities involved in the learning:

(14) So, when I was explaining the articulatory features of a sound, I based my interpretation on my teacher's sentence. This made it clear.
(S6, Advanced)

(15) I feel that I can learn some presentation skills when listening to others' presentations. For example, you may not be familiar with the form language for presentations such as how to make a smooth transition, but you can learn it from your peers.
(S1, Advanced)

(16) At the beginning of the first year of my MA, I found that the content was difficult. I fell behind and got lost sometimes. After roughly one or two months, I finally got on track. EMI facilitated both reading and speaking. I knew how to connect the ideas from different chapters. I learned how to explain an idea in English by imitating the instructors' language. There were many Q&A interactions during the lectures. I think this helped a lot.
(S3, High-Intermediate)

A major learning point emerging from switching into English results from difference between English and Chinese rhetorical patterns, where the former places more emphasis on correct logical flow. If Chinese is used, the students do not have difficulty understanding the content even if there is a lack of logical relations among ideas. By contrast, when English is used, a much

greater cognitive demand is imposed on the students at transitions between ideas because it is a non-native language.

What other knowledge did students learn from EMI?

In addition to subject knowledge, the interviewees also reported on additional knowledge they learned from the EMI courses. First, at least two students explicitly stated that the reading and presentation of English materials enabled them to broaden their knowledge in different domains of linguistics. For example, in a course on functional linguistics, one interviewed student was assigned a paper related to psycholinguistics for oral presentation; in order to give a successful report, he had to read the assigned paper thoroughly and carefully, which expanded his scope of interest beyond functional linguistics and facilitated follow-up reading activities on similar topics. If the assigned papers had been in Chinese, the pool of research available would have been much smaller and therefore reduced the possibility for students to explore interdisciplinary studies.

Similarly, the exploration of different subfields of linguistics by reading diverse English research articles also allows students to make more in-depth analyses for their research, that is, analyzing the speech act of comforting by observing elicited sentences in a course on language acquisition and comparing them to authentic data in a course on interactional linguistics. Vocabulary from other fields of study can also be learned from reading assignments. The benefit of EMI in enhancing students' knowledge of other disciplines or of different cultures can be illustrated by the following example:

(17) I was doing research on debating at that time. I learned many economics terms which are less common in our daily English usage. When I was writing the research paper, the English readings became helpful because I knew what economics jargon I should use in my research paper.
(S5, Intermediate)

The professors' and the students' responses discussed above demonstrate both commonalities and differences. Regarding English learning, both groups agree that EMI is beneficial to students in boosting their language abilities (Hsieh, 2007). This may explain why the students generally take a favorable attitude toward EMI as all students were informed that they needed to pass a standardized English test before graduation. A second reason is that most of the interviewees were aware that the teachers would always switch to Chinese to explain complex ideas whenever necessary. The anxiety about not being able to comprehend a given idea was thus greatly reduced. As for transmission of linguistics knowledge, the two groups differed in their attitude. To the students, as long as certain knowledge is learned, the amount and degree of complexity of ideas may not be their central concern. To the linguistics professors, however, comprehensible input of professional knowledge

is the goal of the instruction. Using English to teach content that requires abstract, logical reasoning, especially that involves knowledge closer to the hard sciences, usually leads to schedule delay or simplification of input (Byun et al., 2011; Huang, 2018; Kim et al., 2018) because the teachers may need to repeat the ideas in different ways or in simpler language until the message is successfully conveyed. In light of the diverging views, the proportion of English and Chinese used should be adjusted according to students' proficiency levels so that language does not become a barrier in the development of disciplinary literacy.

Discussion and conclusion

In this study, we have reported on the pedagogical practice of EMI in linguistics courses by 16 linguistics professors from four national universities in northern Taiwan. A qualitative interview was also conducted with seven linguistics MA students in a Department of English at one of these universities. The major contributions of this work are as follows. First, we have shown that linguistics as a discipline of social sciences presents a diverse picture in terms of the applicability of EMI (Kuteeva & Airey, 2014), especially in subdomains related to complex thinking processes. Even from the perspectives of English majors and of their professors, a whole-English approach is an *implausible* goal if the course is to provide comprehensible, and hopefully, optimal input of linguistics knowledge, as the transmission of disciplinary knowledge requires more complex language codes, involving careful planning before explicit details are delivered. This observation is also compatible with Bernstein's (1964, 1999) argument on elaborated codes, which characterize instructions in educational settings (see also the review section of EMI in the disciplines of hard sciences and soft sciences).

Second, we have identified a number of crucial factors that may determine the efficacy of EMI. These include:

- instructors' English proficiency, including pronunciation;
- students' English proficiency;
- complexity and nature of course content;
- students' negative affect; and
- students' past EMI experience.

As reported in the literature reviewed (Byun et al., 2011; Lei & Hu, 2014), lack of pronunciation accuracy, the most basic skill of an English instructor, was lamented as a detrimental factor that led to instructional failure. The same problem may hold true for the instructor's mastery of appropriate vocabulary, grammatical structures, and logical coherence among ideas. If even the basic language requirements are not met, it is called into serious question whether teaching professional knowledge can be effective or not. Although support programs (cf. Kim, 2017) to promote academic teaching excellence

have been the recent focus of administrators in charge of the implementation of EMI, whether these programs target the students' needs requires extensive research.⁸ In view of the importance of instructors' oral proficiency, it is suggested that rigorous screening of EMI instructors be conducted to select appropriate instructors with adequate English abilities.

In addition to instructors' English proficiency, the students' proficiency level is highly correlated with the degree of difficulty of a given subject (see also Bolton & Kuteeva, 2012; Byun et al., 2011; Chern & Lo, 2017; J. Kim et al., 2018; Mahboob, 2014; Yeh, 2013, to name just a few). For higher achievers, input of more difficult subject knowledge in English is more acceptable than those with lower proficiency. This tendency is consonant with the instructors' responses in the questionnaires, which suggest that English is more suitable for juniors and above (see the result section of the questionnaire for linguistics professors).

The third factor concerns the scope of knowledge involved in the linguistics courses. Whereas functionally oriented linguistics allows for more use of English, Chinese is preferred in theoretical linguistics courses such as Syntax and Phonology, which require extensive professional training to carry out the derivations of language structures. Meanwhile, the increasing importance of information technology and computer-literacy skills in higher education (see Chang & Wu, 2017) has added elements of hard sciences to linguistics and thus greatly increased the diversity of knowledge in the discipline of linguistics. As shown in the questionnaires and interviews, such subjects present greater challenges to the students, especially to those with lower proficiency.

How to switch to the right language in classroom instruction, therefore, is an important consideration for EMI teachers. It should be cautioned, however, that constant and repetitive explanation of the same content in two languages may be a waste of time, reducing the amount of input. If, instead, Chinese is used throughout (except for technical terms), the instructor may be able to provide significantly more in-depth input of the same linguistics content. In such cases, the teachers' priority should be the imparting of content knowledge.

Related also to the type of knowledge involved is the language of the professional knowledge that is stored in the learners' mental lexicon. As shown in the interview, students found it easier to process the English lecture if related content was stored in English due to their previous learning experience. For the English majors interviewed in the study, their introductory linguistics knowledge was mainly acquired from English textbooks. Therefore, they had less difficulty processing related concepts. As for mathematical calculation and other hard sciences knowledge, since they were mainly acquired in Chinese in high school and college, Chinese instruction was more acceptable to them.

A fourth factor, which is less frequently noted in the EMI literature, is the difference in students' willingness to participate in classroom interaction. As demonstrated by response (13, S4), students with limited competence in English may avoid participation in class discussion in Q&A series or in

expressing their opinions because they are afraid to make mistakes when speaking English. It is therefore the instructor's responsibility to address this factor by choosing appropriate codes in content knowledge teaching so that different students' needs are satisfied.

A last factor that can influence the effect of learning is students' previous exposure to EMI courses. If the students are immersed in an EMI environment, they need less time to adapt to the class. If not, it may take them at least one to two months to adapt to the EMI context. It follows that in a course teaching specialized knowledge, this is a great waste of time. To less proficient speakers, the processing load entailed in English instruction is even greater. Instructors therefore need to tailor their teaching to suit the different needs of the students.

The above findings and discussion support the contention put forth by previous studies that a successful implementation of EMI involves a moderated approach with a tactful switching between Chinese and English (Butzkamm, 1998; Chung & Lo, 2017; Kim et al., 2018; Tam, 2012). If, however, a radical approach is taken, implementing EMI with the sole aim of practicing bilingual education, one wonders whether the students' language proficiency might be "diluted" since students would end up being good at neither English nor their mother tongue (Engelbrecht & Wildsmith, 2010, p. 125). Following this line of thought, we argue that the practice of EMI cannot be equated with acquisition of language skills. Instead, the development of academic literacy (Lea & Street, 2006) is discipline-specific and it involves a balance between Chinese and English so that disciplinary knowledge can be fully acquired (see also Kuteeva and Airey, 2014).

As a conclusion, we would like to cite the following response by a linguistics professor, which summarizes the core principle of instruction of disciplinary knowledge:

(18) Although students' English ability is important, in higher education, development of professional knowledge and ability is the crucial part [of the education]. If we only pursue the whole-English approach but overlook students' responses and proficiency, this will not achieve the goal of promoting language and professional development and will end up with students learning neither language nor professional knowledge.

(Professor #1)

This study situates linguistics teaching in a Department of English. It is hoped that these findings may provide a significant reference for stakeholders and policy makers in the implementation of EMI.

Notes

- 1 The corresponding author of this chapter.
- 2 According to Neumann et al. (2002, p. 406), examples of "hard pure" sciences include physics and chemistry, "hard applied" sciences are typified by engineering

subjects, “soft pure” knowledge involves qualitatively based knowledge such as history and anthropology, and “applied soft” includes education and management involving “enhancement of professional practice” with its aim “to yield protocols and procedures.”

- 3 <https://cirn.moe.edu.tw/Upload/file/36/67053.pdf>
- 4 <https://news.ltn.com.tw/news/life/breakingnews/2470106>
- 5 Parallel language use is practiced in the Nordic community (Danish, Swedish, Norwegian, Icelandic, and Finnish) (Hultgren, 2016, p. 158). According to the Declaration on Nordic Language Policy by the Nordic Council (quoted by Hultgren, 2016, p. 158; for the original document, see Gunnarsdóttir et al., 2007, pp. 93–95), “[t]he parallel use of language refers to the concurrent use of several languages within one or more areas. None of the languages abolishes or replaces the other; they are used in parallel.”
- 6 For the original/non-translated text in Mandarin, see Appendix 6B.
- 7 See https://lttc.ntu.edu.tw/E_LTTC/E_GEPT.htm#AMenu1 for a full description of the proficiency levels. The students’ levels were evaluated and determined by two linguistics professors according to the GEPT level descriptions. They were also the participants of our questionnaire survey, have been English language teachers for over ten years, are familiar with the GEPT rubrics, and were these interviewees’ instructors at the focal MA program. Therefore, they had opportunities to observe the students’ proficiency from their written assignments and oral presentations. According to the two professors, the level of writing skill of each student was congruent with that of their speaking skill.
- 8 For example, various programs have been offered at one national university for teaching excellence: <https://ctld.ntnu.edu.tw/%E6%9C%80%E6%96%B0%E6%B6%88%E6%81%AF%E6%95%99%E5%B8%AB%E5%B0%88%E6%A5%AD%E7%99%BC%E5%B1%95/8888>

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APPENDIX 6A

EMI questionnaire for linguistics professors

EMI在語言學專業課程之授課情況調查

All questions contained in this questionnaire are strictly confidential.

Background information

請列舉您教授之語言學專業課程(包含大學部及研究所)

課程一:

課程二:

課程三:

課程四:

課程五:

以下問題請依照您個別課程的情況回答：

課程名稱	問題	中英文比例
課程一：	您在該課堂使用中英文的比例為何？	中文_____ % 英文_____ %
課程二：	您在該課堂使用中英文的比例為何？	中文_____ % 英文_____ %
課程三：	您在該課堂使用中英文的比例為何？	中文_____ % 英文_____ %
課程四：	您在該課堂使用中英文的比例為何？	中文_____ % 英文_____ %
課程五：	您在該課堂使用中英文的比例為何？	中文_____ % 英文_____ %

針對每個學科，您認為什麼時間點是比較適合使用EMI授課？

學科名稱	時程
	<input type="checkbox"/> 大一 <input type="checkbox"/> 大二 <input type="checkbox"/> 大三 <input type="checkbox"/> 大四 <input type="checkbox"/> 碩士班 <input type="checkbox"/> 博士班
	<input type="checkbox"/> 大一 <input type="checkbox"/> 大二 <input type="checkbox"/> 大三 <input type="checkbox"/> 大四 <input type="checkbox"/> 碩士班 <input type="checkbox"/> 博士班
	<input type="checkbox"/> 大一 <input type="checkbox"/> 大二 <input type="checkbox"/> 大三 <input type="checkbox"/> 大四 <input type="checkbox"/> 碩士班 <input type="checkbox"/> 博士班
	<input type="checkbox"/> 大一 <input type="checkbox"/> 大二 <input type="checkbox"/> 大三 <input type="checkbox"/> 大四 <input type="checkbox"/> 碩士班 <input type="checkbox"/> 博士班
	<input type="checkbox"/> 大一 <input type="checkbox"/> 大二 <input type="checkbox"/> 大三 <input type="checkbox"/> 大四 <input type="checkbox"/> 碩士班 <input type="checkbox"/> 博士班

How is EMI conducted?

以下問題請依照您個別課程的情況回答：請問您在教授(lecture)本課程的時候，什麼情況下會使用英文？什麼情況下會使用中文？

課程名稱	使用英文的情況	使用中文的情況
課程一：		
課程二：		
課程三：		
課程四：		
課程五：		

以下問題請依照您個別課程的情況回答：請問您在給予學生講評(comment)的時候，什麼情況下會使用英文？什麼情況下會使用中文？

課程名稱	使用英文的情況	用中文的情況
課程一：		
課程二：		
課程三：		
課程四：		
課程五：		

以下問題請依照您個別課程的情況回答：請問您和學生互動討論(discussion)的時候，什麼情況下會使用英文？什麼情況下會使用中文？

課程名稱	使用英文的情況	用中文的情況
課程一：		
課程二：		
課程三：		
課程四：		

課程五：

以下問題請依照您個別課程的情況回答：請問學生報告 (oral or written presentation) 的時候，什麼情況下會使用英文？什麼情況下會使用中文？

課程名稱 使用英文的情況 用中文的情況

課程一：

課程二：

課程三：

課程四：

課程五：

以下問題請依照您個別課程的情況回答：請問考試 (quiz or exam) 的時候，什麼情況下會使用英文出題或作答？什麼情況下會使用中文出題或作答？

課程名稱 使用英文的情況 用中文的情況

課程一：

課程二：

課程三：

課程四：

課程五：

Self-evaluation of EMI

您認為整體而言使用英文授課會獲得較高的教學評鑑分數嗎？ 非常不同意
不同意
普通
同意
非常同意

您認為整體而言使用中文授課會獲得較高的教學評鑑分數嗎？ 非常不同意
不同意
普通
同意
非常同意

您認為使用英文授課 (EMI) 可以增進學生對專業領域的知識嗎？ 非常不同意
不同意
普通
同意
非常同意

您認為使用英文授課 (EMI) 可以提升學生的英語能力嗎？ 非常不同意
不同意
普通
同意
非常同意

您是否同意不管授課語言為何，學生的期末報告都必須以英文撰寫或進行？ 非常不同意
不同意
普通
同意
非常同意

最後，您對於EMI有無任何其他的想法願意跟我們分享？

APPENDIX 6B

The professors' and the students' opinions on EMI (written or transcribed in Mandarin)

- (1) 我認為專業學科領域愈為抽象及理論，則愈不適合使用全英語授課。以語言學概論與形式語意學兩個學科為例，前者的概念實例等都非常具體，學習起來較容易抓住概念，而形式語意學比形式句法學更為抽象，有更多的邏輯符號形式，我相信在邏輯推導過程中，若使用母語為媒介，絕對有助於學習。...若適時使用母語可以幫助學生學習抽象概念，特別是講解複雜概念，或解答學生實在無法聽懂的部份時，那麼我認為實在不需要為了堅持全英語授課而堅持。(教授#3)
- (2) 我自己覺得學生的專業知識吸收與他聽不聽得懂授課內容有關，研究所的課程，因為學生並不都是外文相關科系畢業，英語授課的成效並不大，常常需要轉換成中文來講解複雜的內容，常會拖到進度，對學生的幫助也不大。(教授#6)
- (3) 我認為語言只是個媒介，學生是否能習得專業知識，不在於老師使用何種語言授課，而是老師是否能將專業知識以淺顯易懂的方式與學生分享。我看過老師以中文授課，但學生還是聽的霧煞煞，不知所云。(教授#7)
- (4) 因語言組是在英語系下，學生也有語言能力檢定之門檻要求，因此在規定上，報告和論文須用英文。授課語言，因含有複雜難懂的概念，因授課目的是為了使學生了解語言學專業知識，雖然在英語系下，教師仍會視需要使用中文，使學生理解。至於學生作業及口頭報告，為了訓練英語能力，因此規定只能用英文。(教授#5)
- (5) 另外，關於期末報告是不是必須以英文撰寫，我的看法是以開課性質而定。在英語系開課就會要求學生有英文寫作及學術能力。但對於外系大學部學生，則我讓他們自選要中文或英文撰寫報告及口頭報告。(教授#4)
- (6) 其實一開始我們都想說如果可能自己比較不懂的科目，老師用中文可能你會理解快一點，但是其實事實上沒有，因為其實你還要就是一直在那邊很複雜的轉換，老師用中文講可是你又看英文，其實反而有時候會比較慢... (學生#1，高級)
- (7) 有時候其實一些專有名詞硬翻成中文反而會更難理解它的意思。然後用原文的話看，反而比較能理解，他有時候解釋會比用中文解還更明白這樣子...我另外一堂課就是我們一邊介紹英文，可是用中文報告，就覺得這樣子有時候更難去講明白。(學生#2，中級)
- (8) 他會直接英文跟你舉例說你就是大概這樣，那就是之後對你整個寫作也是比較有幫助，你只要稍微 paraphrase 一下就好，可是你如果用中文就是，就是你自己翻，你也不知道對不對，就是都要多一層轉換。(學生#1，高級)

- (9) 就是我在做ppt的時候就是用中文做，那我講中文，可能會比較順。
(學生#2, 中級)
- (10) 像 *corpus linguistics* ...之前老師就幾乎都用全英...大家就會一片放空，然後他就會再轉成中文再講一次，大家就懂了...就沒有辦法太多，因為那離我們的，專業的部分太多。(學生#6, 高級)
- (11) 因為那很注重邏輯，因為你要排除A，排除B，用英文講就霧煞煞，聽不懂。(學生#6, 高級)
- (12) 在KT修課，也是有老師用全英文授課。但是其實我還蠻容易...分神的...因為，我...覺得老師的發音可能不是很好。就是，老師的音調... intonation, 有點...怪...就很容易...<x專注力就不見了x> (uncertain hearing), 因為根本就...太費神...然後整堂課下來不知道老師上了甚麼...所以我剛就在想，所以要英文授課，老師也很重要，學生會覺得不知道你在說甚麼... (學生#3, 中高級)
- (13) 身為英語系/所本科的學生，能用英文對答是基本的能力，一般的語言應用都沒有問題...研究所課程較艱難...有時 paper 的內容的概念艱難加上又有非母語的限制...常常一知半解...又因許多課程都是全英語授課，有時會搞不清楚到底是自己語言能力差不能理解內容還是讀的文章真的太難...若用非母語來問自己不懂的知識...一來會怕是自己“語言”能力不足才讀不懂，問出來怕丟臉...二來因為無法理解內容不知從何問起，用英文問問題時無法很精確的用字、表達自己的意思，老師也許也聽不懂自己要問的問題...對問題的確會猶豫、沒有自信，通常都是私下再找同學討論。(學生#4, 中高級)
- (14) 所以我在解釋這個語音的一些位置特色，就是引用老師的句型，然後來闡述，所以就非常清楚。(學生#6, 高級)
- (15) 我覺得其實你用英文，比如說你present好了，或者你聽別人present，其實你可以學到一些presentation的那些 form, language, 比如說你自己可能不是很熟，但是比如說其他人可能transition做得非常好，對，那些就是都是你可以學到的... (學生#1, 高級)
- (16) 一年級剛進來的時候...會有一點困難...然後有時候甚至會，lost...大概過了...一兩個月之後就可以慢慢進入狀況了。然後...對閱讀啊，各方面，就是，幫助的很大...然後跟那個 - 章節，就是會連接起來...吸收的比較好...Speaking, 也有幫助。就會學老師怎樣去解釋一個東西，學習老師用字之類的...像我們上的很多課，老師會用問答方式...這樣對互動幫助很大。(學生#3, 中高級)
- (17) 像我那個時候是研究debate，然後我就學到很多有關經濟學的詞，然後就是我覺得這個這些詞是平常比較不會碰到的種類，就是我要寫paper的時候可以藉由reading然後寫的東西就有偏更為經濟學的。
(學生#5, 中級)

- (18) 學生的英語文能力固然重要，但在高等教育中，專業知識與能力的培養更是關鍵的一環。若是一味追求全英文授課，而忽略了學生的反應與程度問題，這樣以英語做專業科目的授課，非但不能達到外語與專業同時並進的效果，反而可能讓學生落入兩頭空的困境。(教授#1)

APPENDIX 6C

GEPT level descriptions

(https://lttc.ntu.edu.tw/E_LTTC/E_GEPT.htm#AMenu1)

Advanced

Skill	Level Description
Writing	<ul style="list-style-type: none">• can summarize articles on general and professional topics• can write well-organized and coherent essays, with appropriate lexical and grammatical usage• can express their opinions on a range of topics and discuss them in depth
Speaking	<ul style="list-style-type: none">• can participate in discussions on abstract topics or issues• can fluently express their opinions about social issues

High-Intermediate

Skill	Level Description
Writing	<ul style="list-style-type: none">• can write about topics related to daily life• can write about personal viewpoints on current events
Speaking	<ul style="list-style-type: none">• can express their opinions on topics they are interested in• can express their personal thoughts and opinions in social settings and workplaces without much difficulty

Intermediate

Skill	Level Description
Writing	<ul style="list-style-type: none">• can use simple English to write feedback and comments• can write about their own experiences or about topics with which they are familiar
Speaking	<ul style="list-style-type: none">• can make inquiries and conduct conversations on daily life topics• can discuss or describe personal experiences in general

7 Assessment practices in the EMI classroom in Chinese-speaking higher education contexts

Challenges and considerations

Naihsin Li and Jessica R. W. Wu

Introduction

English medium instruction (EMI), by definition, refers to the use of English to teach academic subjects in a setting where English is a second or a foreign language (Dearden, 2014; Macaro et al., 2018). Such practice is gaining momentum in the higher education context in non-native English-speaking (NNES) regions, including Chinese-speaking domains. This growing trend is largely driven by the drive within higher education toward internationalization (see Chin & Li, Chapter 1 for a discussion on this). It is not unusual for NNES teachers and students to hold the expectation that EMI has the potential to enhance domestic students' English proficiency and intercultural competence, and further promote their competitiveness in the global job market (Galloway et al., 2017; Hu & Lei, 2014; Kao & Tsou, 2017). To this end, EMI is often conceptualized and practiced as an English-immersion program, where English is used as the dominant instructional language between the NNES teacher and students.

Research increasingly reveals that the practice of EMI has posed significant challenges to the standards of teaching and learning in NNES contexts, mostly due to the constraints of the English proficiency of the students and teachers. For example, EMI research in Chinese-speaking contexts has demonstrated that students have difficulties in several areas, including understanding and using disciplinary terminology and general academic vocabulary; comprehending lectures and participating in classroom discussions; and achieving the appropriate academic style in writing (Evans & Morrison, 2011; Galloway et al., 2017; Li & Wu, 2017; Wang et al., 2018). In addition, some EMI teachers may not have adequate English communicative competence to deliver course content effectively; consequently, there is sometimes dilution of content (Galloway et al., 2017; Hu & Lei, 2014; Huang, 2018). All too often, the university fails to offer sufficient support to address difficulties faced by teachers and students (Hu & Lei, 2014).

While most research has focused on teaching challenges and learning difficulties in the EMI classroom, assessment has often been overlooked and remains under-researched, despite being an essential part of teaching practice (Dearden, 2014; Macaro et al., 2018). However, the influence of classroom assessment on learning may be no less profound than other aspects of teaching practices, since it may exert direct influence on learning by informing students about their learning outcomes. Furthermore, the way it is practiced may affect students' learning processes (Sambell & McDowell, 1998). The effect of classroom assessment may even be more prominent in Chinese-speaking regions, where the culture tends to place remarkable emphasis on assessment, testing, and examination (Berry, 2011). Among a few studies which examine assessment practices in the EMI classroom, some issues have already been identified, including the language in which the assessment should be administered; whether English should be included as a focus of assessment; and the fairness and validity of an assessment conducted in a foreign language (Dearden, 2014; Shohamy, 2012; van der Walt & Kidd, 2013).

The purpose of this chapter is to present a critical review of the existing research on assessment in the EMI classroom in Chinese-speaking contexts, exploring how assessment issues identified in such a classroom setting can be addressed and how teachers can create an EMI environment that is conducive to learning through appropriate assessment practices based on a learning-oriented assessment (LOA) approach (Carless, 2007, 2015; Jones & Saville, 2016; Turner & Purpura, 2016). This review is intended to provide an overview of current assessment practices in the EMI classroom. Moreover, it is hoped that it will provide insight by identifying critical aspects of assessment practice that require further inquiries and research, and benefit student learning within, or possibly beyond, Chinese-speaking contexts. The discussion will also highlight implications for EMI teachers' professional development with regard to assessment in Chinese-speaking contexts.

Assessment practices in the EMI classroom in Chinese-speaking contexts

In her large-scale research on the implementation of EMI practice in 55 countries around the world, Dearden (2014) provides very little information regarding how assessment is practiced in the EMI classroom. However, she does call for the appraisal of assessment practices, including the assessment procedure and the focus of assessment, in relation to EMI. This research inspires the investigation of the actual assessment practices in the EMI classroom, with special focus on the effect of medium of instruction. This section reviews the studies on the assessment practices in the EMI classroom in higher education in Chinese-speaking contexts. Most of the research has been conducted in Taiwan and China, where English is acquired as a foreign language, rather than a second language.

First of all, Hu and Li (2017) investigated the effect of instruction language on question-response interactions, a form of classroom assessment,

between teachers and students in the EMI classrooms in two major universities in China. The EMI classrooms, which represented a range of disciplines including business and management, law, social studies, and music, comprised stretches of classroom discourse conducted in the English language, the Chinese language, and a blending of English and Chinese. Teacher questions and student responses were coded in terms of cognitive complexity (using Anderson and Krathwohl's (2001) revision of Bloom's (1956) taxonomy of educational objectives) and syntactic complexity (i.e., the minimal terminal unit [T-unit]). The results showed that while instruction language had no effect on the syntactic complexity of questions and responses, it did have an impact on the cognitive complexity. In particular, the English segments were characterized by cognitively lower-order teacher questions and student responses and a monologic pattern of interaction between teachers and students. Teachers were found to ask more comprehension-related questions in the English segments. Students were more likely to offer no response to teacher questions in English interactions; however, they were more likely to demonstrate their comprehension in Chinese interactions.

Other studies made more comprehensive explorations of how assessment is planned and performed in the EMI classroom. For example, Kao and Tsou (2017) investigated the assessment tools and grading criteria adopted by 29 EMI teachers teaching in the fields of business and management, engineering, and foreign language in higher education in Taiwan. Findings of survey and interview data showed that most of the teachers conducted assessment for summative purposes and used similar assessment tools and formats in both their EMI and non-EMI classes. However, the teachers showed considerable variation in their expectations of the role of English in the EMI classroom, which further affected their expectations of students' use of English and whether students' English proficiency would be evaluated. For example, around half of the participants expected EMI could improve students' English proficiency by requiring students to perform assessment tasks in English, whereas the other half believed that English was merely adopted as a medium of instruction, not a focus of instruction. Nevertheless, 73% of the participants acknowledged that students' English proficiency affected grading to some extent in the EMI classroom. No evidence showed that the teachers explicitly explained to students whether or how their English proficiency would be evaluated. Though the participants in this study claimed to be aware of students' learning difficulties in the EMI classroom, and some compensatory approaches were reported, it is also unclear whether there was a shared understanding among the EMI teachers that students' learning difficulties needed to be accommodated.

With the aims of collecting data on how assessment is conducted in the EMI classroom and highlighting relevant challenges, Wu and colleagues conducted a detailed exploration into Taiwanese university teachers' assessment behaviors by taking into consideration a variety of contextual

factors, such as disciplines, class sizes, students' educational levels and English proficiency, teachers' expectations regarding English, and their (EMI) teaching experience. In the exploratory study, Lin and Wu (2015) interviewed three university teachers from the fields of business, engineering, and medical science, respectively, in terms of their assessment practices in EMI courses. All the teachers reported conducting assessment and providing feedback in English. The teachers also acknowledged that students' classroom performance was inevitably affected by their English proficiency level, and they said they would provide extra resources for students who fell short of the expected level of English. These included assigning study partners or providing audio/video recording of lectures. Despite the similarities in assessment practices, the teachers exhibited different views on the role of EMI courses for students and whether English ability should be a part of the assessment criteria. For example, the teacher from the medical science discipline regarded English ability as an integral part of the medical profession and included English communicative competence in the assessment criteria. However, the other two teachers did not evaluate students' English proficiency in grading, yet they held different views regarding the beneficial effects of EMI to students' professional development.

Li and Wu (2018) further broadened the scope of their investigation by examining not only the Taiwanese university teachers' assessment practices in the EMI classroom but also their self-perceived skills in these practices. The effects of the medium of instruction (English vs. Chinese) and teacher- and course-related variables related to assessment practices were also examined. The results of survey data revealed a high correlation between techniques that were less commonly practiced and those in which the teachers felt less skilled, signaling the possibility that assessment practices in the EMI classroom were dominated by the teachers' familiarity with certain techniques rather than by instructional objectives. In addition, the teachers perceived themselves to be less skilled in certain assessment practices that may be beneficial to students' learning, such as self-assessment and the design of test items that assess higher-level cognitive abilities. Compared with courses taught in Chinese, in EMI courses teachers less frequently involved assessment of students' higher-order abilities. They also less frequently provided feedback or communicated assessment results to students.

Moreover, a considerable number of the teachers indicated that English was a focus of assessment, though not necessarily a focus of instruction. Although the EMI teachers were aware of students' difficulties with English, these difficulties were not commonly taken into consideration and accommodations were seldom made. Finally, the teachers' assessment practices were found to be mediated by variables such as discipline, class size, and the teachers' focus of assessment.

The studies reviewed above have generated a number of assessment concerns in Chinese-speaking contexts, which require immediate attention. These are outlined below.

First of all, when English is usually the default language of assessment in the EMI classroom, EMI teachers differ in their choices of whether to include English as a focus of assessment, although most agree that English is not a focus of instruction. However, there is little discussion regarding why or when they choose to include English as a focus of assessment and what has been done to ensure the validity of the assessment given that students in Chinese-speaking contexts demonstrate varied levels of English proficiency.

In fact, EMI teachers in Chinese-speaking contexts are aware of students' difficulties in performing the assessment tasks in English and agree that students' assessment outcomes are inevitably affected by their English abilities. Nevertheless, they hold different opinions about the need to provide scaffolding or accommodations for students' English difficulties, as well as about the kind of strategies that they consider to be effective. Moreover, as language errors may be pervasive in Chinese-speaking students' English production, there is a lack of consensus on whether teachers should provide corrective feedback on language errors.

The studies reviewed above also reveal that even though teachers report implementing similar assessment practices in EMI and non-EMI courses, the use of English as the language of instruction and assessment does have an effect on how assessment is actually conducted in the EMI classroom. A lack of systematic discussion on the assessment issue in the new classroom setting of EMI may lead teachers to perform assessment practices and address challenges based on their individual beliefs and experiences, disciplinary conventions, or managerial concerns, rather than on the basis of approaches that may support or enhance learning. There has been growing attention to the interrelationship of assessment, teaching, and learning, and the facilitative role assessment plays in relation to learning. In the section that follows, we present a review of research centering on learning-oriented assessment (LOA), which may provide insights into the discussion of the assessment issues in the EMI classroom.

The learning-oriented approach to assessment

According to Boud (2000), assessment serves two purposes: to provide certification (summative assessment, or the assessment of learning achievement) and to aid learning (formative assessment, or the assessment practices that enhance learning). While the traditional view of assessment places more value on its summative functions, there is an increasing shift of attention toward its function of enhancing learning. The concept of learning-oriented assessment (LOA) further suggests that the conventional distinction between summative assessment and formative assessment should be disregarded, because both should serve the purposes of assessment *of* learning and assessment *for* learning, with the primary focus on the latter aspect (Carless, 2015; Jones & Saville, 2016; Turner & Purpura, 2016). In other words, LOA prioritizes learning in the process of assessment and the purpose of assessment is to

collect evidence of learning, the results of which are used to adapt teaching or to guide the next step in learning.

The LOA approach targets learning in a broader sense, which includes not only the learning of knowledge and skills, but also the development of learners' autonomy in guiding their own learning through self-regulation and self-evaluation. Therefore, critical features of LOA include learners' engagement with the success criteria of the assessment task and the feedback on their assessment outcome. More importantly, at the core of LOA is an assessment task, or a learning task, which is aligned with well-specified instruction objectives and learning goals.

In the context of higher education, one of the major learning goals is professional development in a specific discipline. For example, McCune and Hounsell (2005) specify quality learning in the higher education context as students' development of the ways of thinking and practicing (WTP) in the discipline. WTP generally refers to "particular understandings, forms of discourse, values or ways of acting which are regarded as central to graduate-level mastery of a discipline or subject area" (McCune & Hounsell, 2005, p. 257). Carless (2015) has contextualized the notion of LOA within the domain of higher education, and identified three elements of LOA practices, including a learning-oriented assessment task, students' evaluative expertise, and engagement with feedback. Evaluative expertise emphasizes student engagement with the learning objectives and knowledge of the quality criteria, which enable them to further make evaluation of their own performance and that of others. This evaluative expertise is closely associated with students' engagement with feedback, because their familiarity with the quality criteria determines their ability to process the feedback and to make further improvement possible. Several guidelines are provided as tips to help develop students' WTP, such as engaging students in "real-life" activities that "are contextualized within specific disciplinary situations" and providing learning tasks that clearly and directly promote the knowledge and skills that the course requires (see Carless, 2015, p. 965).

However, learning in the EMI classroom in an EFL context appears to be a little more complex, as English language learning is often an intended goal or a hidden agenda. In particular, English language ability has been viewed as an inseparable part of WTPs in certain subjects or disciplines, for English has become the dominant academic and scientific language (Altbach, 2013). If the development of the ability to comprehend or communicate discipline-specific discourse in English is expected in the EMI classroom, then this should be included as a goal of learning as well as a target of assessment.

A body of literature has contextualized the discussion of LOA in a foreign language learning classroom (Jones & Saville, 2016; Turner & Purpura, 2016). Similar to other LOA research, the literature highlights language learners' engagement with the language learning task's success criteria and feedback on the learners' language performance. However, more specific to the goal of language learning is that the learners should be given

opportunities to perform a learning task that require their purposeful use of language in a meaningful or authentic context, because it is believed that “learning transpires as interlocutors engage in the participatory practices of meaning making (i.e., clarifying, verifying, giving/responding to feedback) in social interaction” (Turner & Purpura, 2016, p. 266). Therefore, to foster students’ academic English ability, as required by the discipline, it is suggested that assessment should involve activities that elicit students’ use of English. However, equally important to the development of English as an L2 is the setting of learning goals and the fact that the design of assessment tasks should take account of the level of English proficiency of the target learner group. It is important to provide scaffolding to support students’ task performance by adjusting the level of task difficulty so that students have the capacity to engage with it.

The discussion of LOA within the setting of higher education (Carless, 2015) and foreign language learning (Jones & Saville, 2016; Turner & Purpura, 2016) provides a useful reference for us to consider the assessment issues in the EMI classroom in Chinese-speaking contexts, where the learning of content knowledge is conducted through the medium of a foreign language that students are still learning.

An LOA approach to solving the assessment issues in the EMI classroom in Chinese-speaking contexts

EMI presents challenges to content teachers, for it requires them to be sensitive to issues that may arise when using a foreign language as a medium of instruction, such as how learning through English affects EFL students’ learning and performance. Previous reviews on assessment practices in the EMI classroom in Chinese-speaking contexts have also revealed concerns that need immediate attention. In particular, there is a lack of consensus regarding whether the teachers should address Chinese-speaking students’ difficulties in performing an assessment task in English and how to deal with errors in students’ use of English. At the core of the issues is whether English should be a focus of assessment and, if so, how this should be implemented. The LOA approach may provide useful guidelines for the EMI teachers in making these pedagogical decisions. Considerations and possible measures for dealing with these issues are discussed below.

The role of English in both instruction and assessment should be more carefully considered

EMI teachers in Chinese-speaking contexts hold differing views regarding whether English should be included as a focus of assessment. Literature in the Taiwanese higher education context reveals that generally no more than 30% of EMI teachers consider English to be a focus of assessment in addition to content learning, and that even if this is the case, they nevertheless rarely

include English as a focus of instruction (Kao & Tsou, 2017; Li & Wu, 2018; Lin & Wu, 2015).

The LOA approach emphasizes that assessment should be aligned with teaching objectives and learning goals. Therefore, whether to include English as a focus of assessment should be carefully considered in accordance with the course objectives (Barnard, 2014; Shohamy, 2011). English should become a focus of assessment when it is a relevant WTP for a subject or the discipline. However, to include it as a focus of assessment may bring the validity of the assessment into question, if students' performance is confounded by their English proficiency. This issue deserves attention especially in Chinese-speaking contexts or other EFL contexts where students show a mixed level of English proficiency. Most current practices reveal that EMI teachers in Chinese-speaking contexts anticipate that immersing students in an English environment will lead to their English improving. For example, Li and Wu (2018) have found that while two fifths of the teachers in their study included English as a focus of assessment, one third of them clearly indicated that English was not their focus of instruction. In other words, English has become an implicit learning goal that students have to achieve on their own. It does not seem feasible to expect content teachers to include English as a focus of instruction, since language teaching is not their field of expertise and content courses have their own curricular requirements to fulfill. However, if English is to be included as a focus of assessment, teachers should ensure that students have access to the resources necessary for their English to improve in the specific areas required by the course.

More explicit evaluative criteria should be given

One essential element of LOA practices is students' understanding of and engagement with the quality criteria of the assessment task at hand, which allows them to make judgments about their own performance and that of others. The teachers play an important role in making the quality criteria transparent to students, and this requires intense communication between the teachers and the students about the nature of the criteria and how they can be matched to real products.

In cases where English is included as a focus of assessment, the teachers should also be clear, to themselves and to the students, about whether use of English will be evaluated and, if so, what the evaluative criteria will be. Explicit communication of assessment criteria and even systematic instruction should be provided before the students' English is assessed. The communication of assessment criteria from teachers to students is not a common practice in many Chinese-speaking classrooms (Li & Wu, 2018), which may well be a relic of the traditional teacher-centered approach or Chinese culture's preference for ambiguity (Zhou & Deneen, 2016). In addition, *effective* communication of the assessment criteria also affects students' performance to a great extent. As mentioned in Lin and Wu's (2015) study on three EMI teachers' practices,

one teacher regarded English as an inseparable part of the medical profession; therefore, she included the accuracy, adequacy, and fluency of English language as assessment criteria. Despite such seemingly explicit criteria, it is still likely that students will hold vague and varying concepts about what qualifies as a successful model of accurate, adequate, and fluent presentation, especially when EFL students and teachers appear to be overly obsessed with the native speaker model of English (Galloway et al., 2017). It will be helpful if teachers can provide models of English (preferably both explicitly good and poor ones) when communicating or negotiating assessment criteria with students. The understanding of assessment criteria can also be enhanced by involving students as assessors of their own performance (i.e., self-assessment) or that of their peers (i.e., peer-assessment). Such assessment practices can effectively engage students in the learning process and clarify their understanding by involving them in the actual application of the learning goals and the criteria for success. Furthermore, through the peer- or self-evaluation process, students can gradually develop self-regulation (Boekaerts & Corno, 2005) and autonomy in guiding their own learning, which has been termed *assessment as learning* by Dann (2014).

Scaffolding should be provided to alleviate students' English difficulties

Scaffolding refers to the support for learners, given either by their peers or by their lecturer, to enable them to complete a task or develop new understanding which they are not able to manage on their own (Hammond & Gibbons, 2001; Jones & Saville, 2016, p. 95). The literature on LOA in a foreign language classroom stresses the importance of providing scaffolding to support students' learning. In the same vein, it is equally important for the EMI teacher to provide students with scaffolding, since they may encounter double difficulties in comprehending abstract and complex concepts in a language they are less familiar with. However, as shown in the literature, it is not common for teachers to try to accommodate students' English limitations in assessment, mostly because English is not the focus of instruction (Li & Wu, 2018). However, teachers' hands-off attitude to the language issue may result in a negative impact on students' learning.

If students are linguistically challenged by a task where the assessment of content knowledge is the major focus, teachers should consider providing support to linguistically challenged students by providing them with some formulaic speech patterns or by presenting useful phrases for discussion or templates for oral presentations.

Strategy teaching can have a more profound effect on students' long-term learning. For example, teachers can demonstrate how students can make use of web resources, such as online dictionaries, linguistic search engines, and online writing labs, to help them prepare a written report. In terms of oral presentations, the teacher can demonstrate the conventions of academic discourse and share their own strategies, such as writing a script or conducting rehearsals.

EMI teachers can also provide scaffolding by arranging opportunities for peer learning. For example, the teacher can group students with different levels of English proficiency together so that students can scaffold each other in the linguistic domain. Past studies show that peer learning or collaborative learning can lead to greater academic achievement and stronger motivation for learning. It is also beneficial to students' development of critical thinking, social, and communicative skills (Gokhale, 1995; O'Donnell, 2006; Springer et al., 1999).

In addition to what has been mentioned above, teachers can further lessen the linguistic demands on students by reducing the use of English. One way is to choose assessments that involve non-verbal forms of representation, such as drawing or hands-on demonstrations. Another way is to include the students' L1 as another linguistic resource allowed in the assessment.

There has been a preference for monolingual English classrooms in EMI, in which the use of L1 has been discouraged. This preference comes from the expectation that EMI will benefit EFL students' English proficiency by maximizing their exposure to English. However, the literature has also revealed some challenges of administering assessment in English in Chinese-speaking contexts. For example, Li and Wu (2017) conducted a survey to examine students and faculty members' experiences and perceptions of EMI courses implemented in an international finance and business management program in a private university in Taiwan. In the study, students voiced difficulties in expressing themselves in English due to limited vocabulary and grammar knowledge. Moreover, they experienced difficulties in understanding test items, which were written in English. Indeed, more than 60% of students indicated difficulties in comprehending the lectures and course materials in English. The difficulties students experience in taking the tests in English pose a threat not only to the validity of the tests but also to the learning motivation and self-esteem of the students. Students whose English proficiency is insufficient for them to perform the assessment task in English are likely to have greater levels of anxiety and may even retreat from the learning process (Li & Wu, 2017; Lin & Wu, 2015).

It is generally believed that the incorporation of L1 into an assessment may ensure, or at least enhance, the fairness of the assessment if its major aim is to assess students' subject knowledge. However, it should be noted that the L1 effect could be mediated by students' familiarity with the scaffolding measures (de Backer, 2018; van der Walt & Kidd, 2013). That is, if the content is taught in English and students are not familiar with the terminology in their L1, then a bilingual assessment may not benefit students' performance. Moreover, in an EMI classroom in which students are of diverse linguistic backgrounds, the use of a particular language other than English may favor a certain linguistic group of students, and further raise a fairness issue (see relevant discussions in Coyle et al., 2010, p. 118).

Therefore, it is important that the use of language in the assessment should not be considered independently of the use of language for instruction. If

students' L1 is to be used as a semiotic resource in the assessment, the teacher could consider incorporating it into instruction. Barnard (2014) has proposed a dual-medium education model which includes the L1 as an important tool to facilitate students' learning of academic subject matter and a valuable linguistic resource to acquire academic English in the process of negotiating meaning (p. 17). In this model, Barnard demonstrates how the inclusion of L1 in addition to English in the EMI classroom helps to foster students' bilingual academic literacy, an ability valued in the multilingual community and which may be considered indispensable in some professional communities, such as medical science. Proper incorporation of L1, either by use of code-switching or translanguaging, in the EMI classroom can lead to more effective learning and teaching of the subject knowledge, especially when students' English proficiency is far from adequate for them to receive English-only instruction or when students have prior knowledge of the subject matter in their L1.

Effective feedback should be provided in order to further learning and development

Following the concept of LOA, in which assessment is viewed as a way to collect the evidence of learning and examine the gap between students' learning performance and the intended outcome, assessment feedback is one critical element to bridge the gap and make further learning possible (Black & Wiliam, 1998).

With respect to the focus of feedback, EMI teachers in Chinese-speaking contexts hold differing views regarding whether they should provide corrective feedback on language errors. Li and Wu (2018) revealed that more than two thirds of the EMI teachers in their study only occasionally or never correct students' English errors in assessment performance because language was not the focus of instruction, even though some of them indicated that English language was one of their focuses of assessment.

Feedback should be an integral part of assessment. Therefore, if the use of language is considered a focus of assessment, feedback, either in oral or written form, should be given to guide further development toward the intended goal. Feedback need not address all the language errors observed in a student's performance; instead, it is more effective when it is selective, highlighting specific aspects that the students can do something about. In the EMI classroom where content is the main focus of assessment, teachers can adopt a meaning-focused approach to language error correction. That is, feedback is given on those language errors that cause ambiguity, misunderstanding, or fail to conform to the discourse convention of the subject field (similar to the notion of "functional assessment" in Mohan et al., 2010).

The professional development of EMI teachers in terms of assessment literacy

To address the pedagogical challenges in the EMI classroom, training programs or workshops have been organized, yet assessment is rarely a

training focus (Fenton-Smith et al., 2017; Tsui, 2017). However, university teachers' assessment practices are often influenced by their past experience, disciplinary traditions, or other contextual factors (Bearman et al., 2017; Li & Wu, 2018). Teachers still need training to develop their assessment literacy and awareness of the link between learning, instruction, and assessment (Postareff et al., 2012).

The LOA approach can provide a checklist with which EMI teachers can reexamine and adjust their teaching to meet the learning needs of their students in the classroom. This can ensure coherence between teaching and assessment focuses and further promote positive relationships between assessment and learning. Therefore, it is strongly suggested that the LOA approach serve as the major principle on which training courses for assessment are organized. However, we are also aware that in reality its application can be challenged or hindered by a number of concerns, such as large class size or characteristics of the student cohort (e.g., NNES students with varied levels of English proficiency, or a student body with varied cultural or linguistic backgrounds). In addition, while providing broad guidelines, it remains less clear how the LOA principles can fit into specific disciplinary traditions, given that different disciplines reveal different epistemological characteristics, which may further determine their concept of teaching and preferred teaching methods and thus their methods of assessment (Bager-Elsborg, 2018; Hodgen & Marshall, 2005; Lueddeke, 2003; Neumann et al., 2002). Training should make an attempt to account for these challenges.

The broader setting beyond the EMI classroom, such as the department and the university, also plays a role in affecting teachers' assessment practice (Bearman et al., 2017). For example, the provision of institutional support and resources, such as teaching assistants, an ESP curriculum that is closely aligned with the linguistic needs of EMI courses, or downsizing EMI classes, can effectively lessen the workload of teachers while enabling more learning-oriented practices, such as the provision of timely and specific feedback. In addition, there is need for in-house development programs, which can foster the sustainable development of pedagogical knowledge, including, but not limited to, the aspect of assessment. An in-house developmental program could also help address teachers' pedagogical needs especially when there is both a growing demand for courses conducted in English and also pedagogical concerns that are specific to disciplines and NNES contexts.

Last but not least, these LOA practices require a change in teachers' beliefs about how learning takes place and the role of assessment in learning. This notion of LOA is not new in Chinese-speaking regions. In fact, regions like China, Hong Kong, and Taiwan incorporated the concept of *assessment for learning*, or elements of it, in their educational reforms of assessment at the primary and secondary levels of education at the beginning of the 21st century. However, such practices have not been effectively implemented due to the deep-rooted examination culture in Chinese societies and insufficient understanding among teachers of the concept of *assessment for learning* and how it can be administered in the classroom (see Berry, 2011 for a detailed

review). In addition, while LOA emphasizes a learner-centered approach, in which learners as well as teachers take active roles in learning interactions, many classrooms in Chinese-speaking contexts are still dominated by teacher-centered instruction, with little or no teacher-student or student-student interaction. This traditional lecture-based teaching might be more efficient in transmitting knowledge; however, learning might not occur if students show little engagement. Therefore, a prerequisite for the successful application of LOA is often a change in the mindset regarding the value of assessment and its interrelationship with learning. To be specific, the widely-held belief in Chinese societies that assessment mainly serves summative functions needs to be modified, and assessment needs to be repositioned as a way “for the learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there” (Assessment Reform Group, 2002).

Conclusion

Language is in fact an integral element of content, and familiarity with the language determines one’s access to academic content. Therefore, EMI for EFL teachers and learners does not only imply a change in the code through which content knowledge is transmitted or received, it also leads to fundamental changes in overall classroom practices, affecting “what is taught, how it is taught,” and also “what is learned and how” (Bailey et al., 2008). The same is true for assessment. Assessment practices in the EMI classroom need to be carefully planned by taking into consideration the effect of medium of instruction on learning. Specifically, assessment must be used not to frustrate learners, but to enhance their learning and confidence in using English as an additional language in their professional domain.

Research on EMI reveals Chinese-speaking students’ difficulties in learning disciplinary expertise through English. We propose that this may be addressed if teachers adopt learner-centered approaches to teaching. Specifically, teachers could use regular classroom assessments to constantly monitor students’ progress and to adjust their own teaching to students’ needs. The LOA approach provides broad guidelines on how appropriate assessment practices can promote learning. However, several aspects of the practice of LOA in the EMI setting still need further research, including, but not limited to, the best practice of language choice in assessment tasks and feedback-giving; effective scaffolding strategies that help to alleviate students’ language difficulties and, if possible, to enhance further learning; and satisfactory assessment criteria for evaluating English communicative abilities, either speaking or writing, in the EMI context (e.g., Pilkinton-Pihko, 2013). In addition, it is worth further investigating how the LOA principles can fit into specific disciplinary traditions. What is more, it is also likely that the LOA approach may need modifications within Chinese-speaking contexts (Brown et al., 2011; Zhou & Deneen, 2016). However,

exploration of these issues requires that teachers first change their mindset about the purpose of assessment and incorporate the notion of LOA into their teaching practices. It takes time and effort to change, but the reward will be worthwhile.

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8 A dynamic language ability system framework for diagnosing EMI students' readiness of English language ability

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Introduction

Internationalization has become a global trend in higher education (Maringe & Foskett, 2010). Driven by this trend, universities in non-English speaking European and Eastern Asian countries have been providing an increasing number of programs with English as the medium of instruction (EMI) (Dafouz & Guerrini, 2009; Doiz et al., 2013; Graddol, 2006; Hughes, 2008; Jenkins, 2014; Wächter & Maiworm, 2014). However, the English proficiency of the local intakes has been found insufficient to sustain meaningful higher education in the context of EMI. These challenges due to language deficiency have been identified in students studying in both Eastern Asian (Evans & Morrison, 2017; Hu & Lei, 2014; Toh, 2016) and European countries (Doiz et al., 2012), and have been found to be detrimental to the process of knowledge construction (Toh, 2016).

To understand the language difficulty faced by these EMI students, existing studies have placed exclusive emphasis on analyzing students' needs in different language skills (Berman & Cheng, 2010; Evans & Green, 2007; Evans & Morrison, 2018). Following the same line of thinking, language education and assessment in the context of EMI have been undertaken according to the conventional view that separates language, content (or the meaning carried by the forms of language) (Cai & Kunnan, 2018; Douglas, 2000), and thinking competence (Cai & Cheung, 2019). Before students enter their first year of EMI programs, they are usually diagnosed in terms of their linguistic knowledge (vocabulary, grammar, and textual knowledge) as represented in different types of language skills (i.e., listening, reading, speaking, and writing) (Bachman & Palmer, 1996, 2010). Drawing on different levels of general language proficiency diagnosed, new intakes are then placed into different streams of English enhancement programs (EEP) to be coached intensively in these language skills, usually lasting two academic years (Cai & Cheung, 2019).

However, language use in an EMI context is more complex than a top-up of general language knowledge in addition to subject knowledge and

other higher-order thinking skills as perceived by language theorists of the conventional view (Bachman & Palmer, 1996, 2010). Instead, the development of students' language proficiency fulfilling EMI tasks is more than the accumulating of the individual parts of linguistic elements; it is a complex and dynamic process that involves the evolution of language, subject knowledge, and cognitive capacity in an intertwined whole (Han, 2019; Larsen-Freeman, 2019; Larsen-Freeman & Cameron, 2008; Mele et al., 2010; Spain, 2019).

Our goal in this paper is to propose the framework of the Dynamic Language Ability System (DLAS) for diagnosing students' English language readiness for EMI study and for evaluating the efficiency of EMI programs. Our intention is to understand the extent to which background knowledge (i.e., disciplinary knowledge), language knowledge, and strategic and thinking competence can be represented in the DLAS. Our attention extends to the implications of DLAS for language assessment development for EMI programs and for EMI program evaluation.

Conceptualizations of language ability

Throughout the history of language research, language proficiency has been referred to as knowledge of different linguistic aspects. Hymes (1972) distinguished between linguistic competence and communicative competence, the former dealing with knowledge of grammar and the latter with appropriateness of language use in specific situations. Canale and Swain (1980) and Canale (1983) posited a concept of communicative competence that contained four components: grammatical or linguistic competence, sociolinguistic competence (appropriateness of language use), discourse competence (for organizing texts), and strategic competence (communication strategies for compensating failure in language use due to insufficient grammatical competence).

Drawing on their antecedents, Bachman (1990) and Bachman and Palmer (1996, 2010) proposed the well-known framework of Communicative Language Ability (CLA). The CLA compresses grammatical competence, textual competence, and pragmatic competence (i.e., sociolinguistic competence) into a single dimension of language competence and sees language proficiency as the interaction between language competence and strategic competence—two core constituents that determine language performance. An essential feature of the CLA is that this framework takes an ambiguous attitude toward the status of subject-matter knowledge.

In the context of Language for Specific Purposes (LSP), scholars such as Douglas (2000) noted the inseparability of subject-matter background knowledge from LSP language performance. He proposed the concept of LSP ability, which emphasizes the interaction between subject-matter background knowledge and other general language proficiency components (i.e., language competence and strategic competence).

The evolution of language ability theories has clearly expanded beyond a unitary view of linguistic or grammatical knowledge to include textual knowledge, strategic competence, and recently, background knowledge. Meanwhile, thinking or reasoning competence, another critical component, is found scattered in academic writing in language research but rarely formally acknowledged in classic language ability theories. An exception is with Deane et al. (2008). In their development of a new framework for writing assessment, Deane and colleagues emphasize that writing ability involves a complex arrangement of skills including not only language and literacy skills, but also cognitive skills (e.g., document-creation and management skills) and critical thinking skills. The same idea is echoed in Moore (2011), Afshar and Movassagh (2017), Floyd (2011), and most recently, Cai and Cheung (2019).

In short, the evolution of language ability theories is a consequence of the accumulation of new components into the construct of language ability. However, a common deficiency in this theoretical advancement is the inability of these theories to recognize the “interaction” aspect in the language ability system. It is true that models such as CLA and LSP also emphasize the term “interaction,” but they are unable to explicate what this interaction means, how it functions, and what implications the interaction, if it exists at all, has for the practice of language assessment and language education.

Another limitation of dominant language ability theory is that relations among different components of language ability are seen as static. Guided by this idea, language assessment programs are usually designed in such a way as to focus on the diagnosis of certain aspects of language knowledge or skills. According to this static diagnosis, students are grouped and trained according to different levels of language proficiency. In this way, students who produce low overall test scores are usually regarded as low-achievers during a fixed period of English language enhancement. Similarly, students diagnosed with deficiency in writing are treated as poor writers and coached in a way that is tailor-made for poor writers. However, different language components do not necessarily develop at the same speed. For the same students, for a certain period of time their vocabulary knowledge may be able to develop faster, whereas their strategic competence may develop slower. For another period of time, their strategic competence may be able to develop faster when their vocabulary knowledge reaches a certain threshold. This dynamic function becomes more complex when considering the interaction between these conventional language ability components and other critical components such as disciplinary knowledge (Cai & Kunnan, 2018) and thinking skills (Moore, 2011), and between these expanded language ability components and other contextual factors such as academic motivation. This complex, dynamic aspect of language ability, however, is rarely reflected in existing language ability theory. Systems Thinking (ST) (Capra, 1996; Fischer & Yan, 2002; Larsen-Freeman & Cameron, 2008; Mele et al., 2010), on the other hand, provides a lens for us to understand these complex and dynamic features potentially underlying the language ability critical for performing EMI tasks.

Systems Thinking

As a popular term in human ecology and learning, ST has been defined as “a dynamic framework for describing, assessing, analysing, and explaining how a person and the world function together in human development” (Fischer & Yan, 2002, p. 3). Bearing similarity with the reductionism that focuses on constitutional components, ST emphasizes that these components are interdependent with each other and with factors in larger outer systems (Ackoff, 1971). Moreover, ST accommodates the changing mechanism within each constitutional component, and their interrelations with each other, and with factors located in larger systems (Ackoff, 1971; Fischer & Yan, 2002).

ST has become an interdisciplinary theory about nature and human society (Capra, 1996). Under the paradigm of ST, a social phenomenon is not fully comprehensible by being broken into parts; instead, it can only be understood by taking a holistic view (Mele et al., 2010). Following this line of thinking, an education system cannot be fully understood by breaking it down and by measuring and reformulating its parts (Sahlberg, 2012). To better inform the construction of a curriculum, teaching design, and assessment development, educators need to take the perspective of the ST to “see” the whole spectrum of behaviors in the education system (Robinson, 2009, 2015).

To conceptualize education in the paradigm of ST, Jacobson et al. (2016) proposed a set of features falling into two focus areas: (1) collective behaviors of a system, and (2) behaviors of individual agents in a system. The first area contains four features: agents or elements in system (i.e., key components), self-organization, system levels (i.e., Students’ Sensitivity to initial conditions), and emergence. The second focus area consists of (1) parallelism (several things occurring simultaneously), (2) conditional actions (the IF and THEN issue), and (3) adaptation and evolution (see Jacobson et al., 2019).

In language research, Larsen-Freeman and colleagues (Larsen-Freeman, 2012, 2019; Larsen-Freeman & Cameron, 2008) see language learners as agents and propose the Complex Dynamic Systems Theory (CDST) as a perspective to study the language learning process. This CDST contains a relational system that reflects the ST idea that the whole arises from the interactions between the parts (Capra & Luisi, 2014). The CDST also contains a temporal component, that is, the relational system evolves within key elements (i.e., linguistic elements) as well as outside them, in higher-level factors across time. According to Larsen-Freeman (2019), this space-temporal system evolves in many directions, dependent on its “initial conditions.” Within this language system, different components interact nonlinearly; with time this interaction iterates and self-organizes into states with different statuses such as the “attractor state” (stability or trend to stay nearby) or “repellor” (readiness to move away).

The Dynamic Language Ability System

Drawing on theories in language assessment and thoughts from ST research, we propose the construct of the Dynamic Language Ability System (DLAS). The DLAS has two subsystems: a space system and a temporal system. The space system has three main features:

- 1 There are four core components in the DLAS: *language competence* (i.e., knowledge of language at the lexical, syntactical, and textual levels, and socio-linguistic knowledge), *strategic and thinking competence* which contains metacognitive (e.g., planning, monitoring, and evaluating) and thinking competence (e.g., analyzing, synthesizing, deductive reasoning, inductive reasoning), and *background knowledge* (e.g., general world knowledge, cultural knowledge, domain-general and domain-specific content knowledge).
- 2 These key components interact with each other and beyond with other contextual factors at micro-level (e.g., motivation, emotion, and other individual characteristics), meso-level (e.g., school factors), exo-level (e.g., media) and macro-levels (country culture, ideology, etc.).
- 3 The interaction between core components and contextual factors are nonlinear. That is, the effects of one core DLAS component on the overall performance of the DLAS are dependent on the nature of other DLAS core components, as well as the nature of factors beyond these core components.

The temporal system mainly captures the dynamic aspect of the DLAS, and has four main features:

- 1 **Parallel pacing:** Each core component has the tendency to develop with its own tempo and magnitude. For example, for young learners (agents) of English, their vocabulary knowledge may develop faster than their strategic and thinking competence (e.g., monitoring, deducing, inferring, etc.) during certain time periods; whereas when the agent becomes more mature, the development in strategic and thinking competence may become faster.
- 2 **Dynamic interdependence:** On the condition of parallel tempo, the development of each core component may depend on the development of another component. For instance, the development of thinking competence may have to depend on the development of the agent's vocabulary knowledge and world knowledge.
- 3 **Bipolarity:** Bipolarity is the direction of both parallel pacing and dynamic interdependence. For parallel pacing, the development may either tend to increase or decrease. For dynamic interdependence, the interference of one parallel pacing may either increase or decrease the parallel pacing

of another core component, or the parallel pacing of other contextual factors located across the micro-, meso-, exo- and macro-levels.

- 4 Fluctuation: The parallel pacing and dynamic interdependence may coexist in a non-monotonous way. For the parallel pacing, the trajectory may display in an up-down pattern, or in a more complex pattern such as up-down-up.

Applying DLAS for language assessment in EMI context

Principles of DLAS development

An essential principle of DLAS is that language-oriented EMI assessments should not only provide valid information about the key components involved during knowledge construction, but also about the dynamic evolution of each component and the evolving relations among these components. DLAS offers a mechanism for achieving these twofold goals.

First, a DLAS program can be developed to support claims like those required by conventional language assessments. The total score of a DLAS is the reflection of the overall achievement in one or more core components of the DLAS, as required by EMI teachers for evaluating the learning outcomes of the students or by educational administrators for evaluating the efficiency of the EMI program. A common practice for using total test scores would be to set up a cut-off point as a reflection of the desired competence threshold (Hambleton & Pitoniak, 2006). However, in the scenario of DLAS, a more subtle treatment is desirable, by zooming into the subscores underlying the total scores, the subscores that represent language competence, strategic and thinking competence, and background knowledge. Of special note is that language assessments in EMI contexts are rarely designed based on such theoretical grounding and therefore, cannot offer subtle diagnostic information regarding students' competence in the core DLAS components. Nor is this analytical approach toward task performance evaluation implemented when EMI subject or language teachers mark their students' task performance.

Another key principle of the DLAS is its focus on the evolutionary trajectories of core components and the relationships within the evolution of each trajectory. DLAS assessment programs of this type repeatedly measure different core components of the DLAS. This repetition allows people to measure where students are on one or more spots on the learning roadmaps, and to explore the change of each component and the relationships between these changes. The purpose of providing such information is to give both classroom teachers and students additional information regarding the weaknesses and strengths of students in different aspects and at different learning stages, an idea best regarded in formative assessment (Scriven, 1967); and to track the change or stability of these weaknesses and strengths across time, a key function of the so-called ipsative assessment (Hughes, 2011, 2014).

These key features need to be instantiated for each practice of the DLAS language assessment program and EMI classrooms closely tied to the purpose of the DLAS assessment. For the development of language assessments in EMI contexts, a needs analysis must be conducted to understand the demands of various EMI curricula in terms of the key components of the DLAS. Here the structure of the DLAS can function as a model for assessment developers to analyze the curriculum descriptions, descriptions of tasks, oral, written work, or physical or virtual artifacts produced by EMI students for the sake of fulfilling the requirements of the EMI programs (e.g., Cai & Cheung, 2019). Beyond ensuring that each core component can be identified in these materials, it is important for test developers to identify the combinatorial patterns of these core components in the materials, and to trace the transition of these various combinations across different stages of study (Nesi & Gardner, 2012).

This transitional structure of DLAS components can be converted into a formal assessment design by mapping the different emphases of required componential competences (i.e., language competence, background knowledge, and strategic and thinking competence) during different stages of EMI studies. More ideally, each of the componential competences can be further decomposed to different extents to create a progressive map. During test construction, general item writing guidelines can be produced to guide item writers to create items that link to the progress variables associated with each phase and that jointly characterize progress on a learning map for DLAS. Figure 8.1 presents the blue print for developing this progressive assessment of DLAS for EMI contexts.

Validity of the DLAS

In educational measurement, validity has been touted as the core quality of any educational assessment (Messick, 1989). Validation refers to the process of validating the model, centering on assuring claims that the model is consistent with the educational reality that it purports to represent (Wolf-Branigin, 2013). The validation of a language assessment program based on the DLAS model generally involves the following aspects: componentiality, interaction, progression, transition validity, and bipolarity.

In componentiality validation, the aim is typically to examine the extents to which performance is dependent on the aspects of DLAS componential competences (i.e., language competence, disciplinary knowledge, and strategic and thinking competence). There are multiple ways of generating evidence for componential validity. A straightforward way is to conduct quantitative studies to examine the extent to which a certain componential competence contributes to test takers' performances on the assessment tasks. Methodologically, this approach is no different from validation studies focusing on construct representation (Messick, 1989). However, there is a substantive difference between such studies and componential validity. Simply

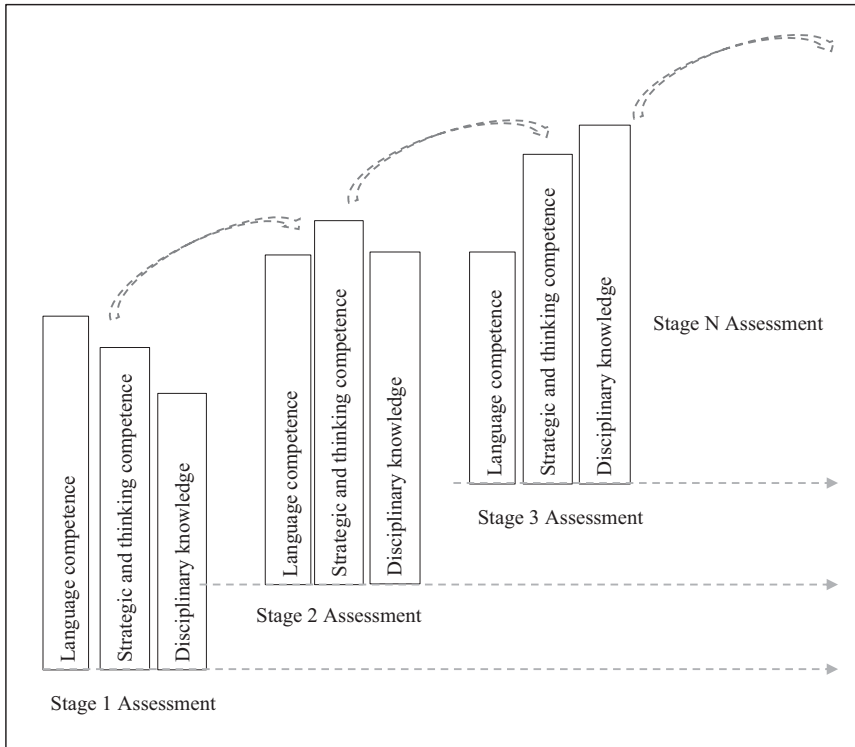


Figure 8.1 Progressive assessment of the DLAS.

put, construct-representation based validation study is about additive effects of construct-relevant components, whereas componential validity for DLAS starts from this construct-representation procedure and moves toward a more comprehensive examination of the complex interaction among these key components. Another difference is that construct-representation based validation study focuses on the relative importance of different construct-relevant components, whereas DLAS componential validity focuses on the participating and non-participating of the theoretically valid components across different stages of learning and performance. For instance, the skill of deduction, as theorized into the component of thinking competence, may not be assessed in English for young learners. This, however, should not lead to the conclusion that the test is not a valid DLAS assessment. Rather, this absence could be regarded as a valid absence (non-participating) more consistent with the educational reality (usually deducing is developed as children become more mature). Indeed, it is not rare to see that language assessment programs based on a conventional view of language ability also choose to

design such types of absence in their assessment programs, but this absence is rarely officially claimed.

According to ST theories, interaction refers to the interdependence between different factors functioning under a language performance. Interaction validity in line with DLAS can be categorized using different criteria. Using a physical criterion, interaction can be divided into two types of validity: internal interaction validity and external interaction validity. The first refers to the interaction among core components of DLAS: language competence, disciplinary knowledge, and strategic and thinking competence, whereas external validity deals with the dependence of the core of the DLAS with contextual factors located within the individual (e.g., students' motivations, psychical factors, gender) or in broader levels (e.g., social economic status, teacher factors, school policy, public media, ideology, and so forth).

The function of interaction can also be divided into moderation and mediation. Moderation refers to the constraining or amplifying effect of one factor on the relation of another factor to a third factor. Indeed, this idea of moderation is not new. In conventional language validation studies, it has long been found that the effect of background knowledge and strategic competence on language performance varies with the learners' general language proficiency (Cai, 2018; Clapham, 1996; Krekeler, 2006). Most recently, Cai and Kunnan (2019, 2020) identified the model which they called the Island Ridge Curve (IRC). According to this model, the effect of strategic competence and disciplinary knowledge on LSP reading performance fluctuates with the continuous increase in general language proficiency.

Another type of interaction is mediation, or the transmission of effect from one factor to another (MacKinnon et al., 2007). Just like the idea of moderation, the concept of mediation is also not new to DLAS. In their argumentation for the interaction mechanism underlying the CLA, Bachman and Palmer (Bachman & Palmer, 1996; Bachman & Palmer, 2010) claimed that strategic competence functions as the mediator between language competence and the outer language performance. Regardless, in the language assessment literature, to the authors' best knowledge, systematic investigation of this mediation effect is scant. An exception is the study by Cai (2020). Cai systematically studied the interactions between background knowledge, strategic competence, and language knowledge in determining an LSP reading performance. By concluding his findings with a Triple-Decker Model, the author found that it was internalized disciplinary knowledge and language knowledge that mediates the effect of strategic competence on language performance. However, Cai's conclusion was only based on cross-sectional data rather than on a longitudinal observation of the dynamics of the mediation effect. Regardless, the mechanism of mediation has emerged as an important aspect to be investigated for validation studies based on the DLAS.

The intention of progressive validity is to link the evolution of componential participation with the progress of EMI disciplinary studies. Demands

on English language, thinking competence, and disciplinary knowledge are likely to vary during different stages of EMI studies (Cai & Cheung, 2019). It is possible that, during early stages of EMI studies, students are confronted to similar extents with challenges from discipline-related language competence, new disciplinary knowledge and thinking with these new disciplinary knowledges. However, as students' disciplinary and language competences accumulate simultaneously, their application of thinking competence will become more ready for knowledge construction. As this thinking competence is more ready for use, students' acquisition of discipline-related language competence and knowledge construction becomes much easier. In this sense, the development of language competence, disciplinary knowledge, and thinking competence may display different speeds of development during different stages of EMI studies. In a study set in Hong Kong, Cai and Cheung (2019) found emphasis of EMI writing assignments on argumentative essay writing decreased during the whole span of EMI studies, whereas a reversed trend was found with descriptive writing. A similar trend was identified by Gardner and Nesi (2012) with EFL learners in British universities. Although from two different perspectives (one from curriculum materials and another from learners' responses), the two exemplified studies produced the same information: demands of EMI studies on language competence, disciplinary knowledge, and thinking competence vary across the span of EMI studies and very likely, the development of students' disciplinary knowledge, language competence, and thinking competence vary either in parallel, or interactively. Assessment programs developed based on DLAS need to cater to these parallel progressions of the core DLAS components and the interaction among these progressions across repeated assessments.

Bipolarity validity refers to validation of the assumption that the effect of one participating component on the proximal factor may switch between being positive and being negative. Traditional validity studies usually assume that the potential effect of a participating factor is either positive (e.g., language competence) or negative (e.g., anxiety). Drawing on this validity assumption, students engaging more in thinking during their performance on EMI tasks should benefit more from their thinking than students engaging less when solving EMI knowledge construction tasks. Similarly, academic motivation (e.g., self-efficacy) is usually found to benefit students' learning (Schunk & Zimmerman, 2007) whereas test anxiety is found to be harmful for student learning (von der Embse et al., 2018). However, thoughts from ST as well as from recent development in educational psychology and language testing research suggest that this assumption of monotonous potential may be problematic with these affective and cognitive factors. The idea of bipolarity is prompted by the "golden mean" philosophy of Aristotle more than two millennia ago. The theory proposed that excellence (virtuous disposition) lies in a middle point between two extremes (Bartlett & Collins, 2011). Put another way, the ideal value along a trait continuum should not be too

little, nor too much. To take this thought a little further, when the value of a trait moves from the lower extreme toward the middle (the “golden mean”), the potential contribution of the participating factor may show a positive motion (i.e., more is more); however, when the value of the trait passes the golden mean, the motion of the effect may turn downward (i.e., more is less). This bipolarity of psychological factors is illuminating an increasing number of scholars in psychology and educational psychology (Niemic, 2019; Samuel & Tay, 2018). Coincidentally, the bipolarity of participating components also corresponds with the nonlinear effects of cognitive factors such as learner strategies (Hong-Nam & Leavell, 2006; Hong-Nam et al., 2014) and background knowledge (Clapham, 1996) on language performance. Most recently, Cai and Kunnan (2019, 2020) summarized the nonlinear function of these cognitive factors on LSP performance in the Island Ridge Curve (IRC). According to the IRC, the potential of strategy use and disciplinary knowledge effect may exhibit two opposite directions: a downward potential and an upward potential. The upward potential mostly occurs with students with language competence approaching the peak (sort of a “golden mean”) while the downward potential mostly occurs in students with language competence moving above the peak. Polarity validity studies aligned with the DLAS need to explore whether the polarity mechanism exists with these DLAS components at more subtle levels and with contextual factors such as academic motivation factors (e.g., language self-concept, self-efficacy, master goals, performance goals, interest, utility value of language studies, and so forth).

Integrating DLAS into EMI programs

Although discussions on ST and language as a dynamic system prevail in the literature, there is no consensus on the best practices for integrating this innovative view of language into language instruction for EMI programs. The DLAS provides a dynamic view of the core competences involved for EMI students to accomplish knowledge construction using English language and of the functional mechanism to accomplish them.

EMI language curriculum

EMI language enhancement needs to have a curriculum based on a needs analysis of the EMI studies. For such a needs analysis, it is not enough to focus on the linguistic knowledge and language skills as language researchers usually do (Brown, 2016); one has to look into the contents of the EMI curriculum and course outlines, for requirements on language, disciplinary knowledge, and levels of thinking (e.g., Cai & Cheung, 2019). When developing the curriculum for a language enhancement program for EMI students, it must be highlighted that the goals of the language program are to enhance students’ language readiness so that they can effectively engage in the process of

knowledge construction and to reduce their cognitive load due to language barriers. Although the language curriculum of EMI programs bears similarity with a conventional language curriculum in its attention to linguistic knowledge, the EMI language curriculum needs to focus more on the elements of disciplinary knowledge and thinking.

To ensure effective EMI, the language enhancement curriculum needs to reflect the progression of different types of disciplinary knowledge across different stages of EMI studies. Duffy (2014) defines disciplinary knowledge as “knowledge drawn from the unprecedentedly complex and prolific bodies of discourse built up around newly configured professions and disciplines” (p. 2). Cai and Kunnan (2018) further distinguished between domain-specific disciplinary content knowledge that emphasizes the knowledge specific to a subdiscipline (e.g., paediatrics knowledge) and domain-general disciplinary knowledge (e.g., general medical knowledge that every medical professional needs to master). To reflect this disciplinary feature, language curriculum development needs to cater to language features particular to that discipline at various levels (Hyland, 2012; Hyland & Bondi, 2006): the lexical level (e.g., developing discipline vocabulary lists, on top of the academic vocabulary list), the syntactical level (e.g., identifying sentence patterns particular to the field), and the textual level (e.g., identifying particular text types appropriate for the disciplines and stages of studies).

More importantly, in EMI disciplinary studies, it is common to find that courses covering domain-general disciplinary knowledge are offered during early stages while more domain-specific courses are offered during later stages (Cai & Cheung, 2019). This progressive feature needs to be reflected in the design of the language curriculum. By nature, disciplinary knowledge differs between declarative knowledge (which is further distinguished into factual and conceptual knowledge) and procedural knowledge (Anderson et al., 2001; Bloom et al., 1956). Given this difference, the demands of mastery of different types of knowledge on learners’ cognitive competence also vary (Bloom et al., 1956). The complex nature of this interaction among linguistic factors, disciplinary knowledge, thinking competence, and the progressive features of the interaction needs to be reflected in language enhancement curriculum. A good example of EMI curriculum development is Cai and Cheung (2019). In their analysis of EMI writing assignments, the authors not only examined the componentiality of EMI writing assignment requirements, but also the transition of these components across different stages of EMI studies. Lo and Fung (2020) identified similar progressive patterns in secondary school students.

EMI instruction pedagogy

The goal of education systems is to foster an environment where teachers and students share in the responsibility for creating the curriculum and pedagogy which enables the co-construction of knowledge (Spain, 2019). The DLAS

provides a holistic perspective for teachers and learners to understand the objectives of learning and the potential paths leading to this successful collaboration. The DLAS encourages an expansionist view of considering multiple perspectives to seek answers and solve real problems. This approach accommodates the complex organization of different cognitive functions involving linguistic competence, disciplinary knowledge, and thinking competence, which promotes transdisciplinary professionalism for sustainable and adaptable learning (Spain, 2019). In line with DLAS, language and subject teachers serving EMI programs should facilitate learning by transcending pedagogical boundaries and linking their instruction more closely to students' ecological settings (Robinson, 2009).

Language teachers need to recognize all requirements essential for their students to thrive, not merely survive, in their EMI programs. This necessitates the language teachers to not only determine different perspectives that their language courses need to emphasize and the extents of that emphasis, but also to develop the disposition to seek collaboration with colleagues in relevant disciplinary areas, or from their own students who might be more familiar with the content that the language course is dealing with. They need to decide, on the condition that all aspects of DLAS components need to be accommodated, the extents to which different aspects of the DLAS components are emphasized during different stages of EMI studies. To achieve this goal, EMI language courses may be co-taught by language specialists together with a disciplinary teacher, wherever resources allow for such a practice, or by inviting other disciplinary teachers to join the class at appropriate times.

Alternatively, language instructors can organize activities to help students to activate their disciplinary knowledge and thinking skills before they proceed with their language tasks. During language task performance, the language instructors' major duties include not only helping students to identify discipline-related linguistic patterns (Hyland & Tse, 2009), but more importantly, helping them to foster learning capacity in using disciplinary knowledge, linguistic competence, and thinking skills to thrive in knowledge construction. This emphasis of DLAS-oriented pedagogy is similar to the idea of disciplinary literacy (Shanahan & Shanahan, 2008) in the general area of educational studies.

Subject teaching in line with the DLAS also accommodates the complex organization of linguistic knowledge, disciplinary knowledge, and thinking competence, as well as the dynamic evolution of this interaction. Different from EMI language programs, however, in regular knowledge construction classes only limited attention needs to be given to linguistic issues, unless teachers find their students' language proficiency becomes such a concern that it makes knowledge construction difficult, or when certain language skills are in special need during a particular time of study. For instance, project-based academic writing is usually an important constituent of EMI students' Honors' Project. For this requirement, students need to go through the whole

process of identifying a problem, reviewing the literature, designing the study, collecting the data, conducting analysis, and writing up the findings. This whole scholarly process is unique in that it requires specialized knowledge and skills in integrating language competence, disciplinary knowledge (declarative and procedural), and thinking competence. In this case, a language specialist highly knowledgeable in the relevant disciplinary knowledge, or a subject specialist highly competent in English language may be appropriate for providing intensive training for students with such a need.

A final aspect related to the integration of DLAS to EMI instruction are course assignment tasks. DLAS in course assignments is reflected in two ways: descriptions of course assignments and rubrics for evaluating students' work. The descriptions for the course assignments need to explicate the purpose of the task and the aspects of evidence expected to be extracted from students' performance. For a language course, the assignments need to specify what kinds of language skill(s) the tasks are expected to elicit from students' performances, the types of disciplinary knowledge (domain-general or domain-specific, declarative or procedural) expected of the students to employ, the extents to which such types of knowledge are evaluated (i.e., awareness or application), and the types of and extents to which different levels of thinking skills are required. More importantly, it is necessary to provide transparent marking rubrics with analytical criteria, each aligned with the core components of the DLAS. Besides, a score weighting scheme needs to be provided to reflect the progressive emphasis on different aspects of the DLAS during different stages of EMI studies.

An important note for course assignments in language-oriented courses is that, for the evaluation of performance-based assignments, content is often provided as a criterion together with fluency and language form in analytical rubrics, for example, the Jacobs' scale (Jacobs et al., 1981). However, there is little literature regarding what this content particularly refers to (Alderson, 2005; Knoch, 2009). In line with the DLAS, content needs to be included as a key criterion for EMI language assignments to refer to the fulfilment of applying relevant disciplinary knowledge for meaningful disciplinary communication. The weighting of this criterion to the overall score needs to be aligned with the dynamic view by considering the developmental trajectories of different aspects of the DLAS across different stages of studies. Quite similar to language-oriented courses, discipline-based courses usually describe requirements for disciplinary knowledge and, most of the time, the thinking skills required for accomplishing the tasks, but leaving descriptions of language demands overlooked. This overlooking of language elements is reflected in marking rubrics as well. It is not clear, however, whether and to what extents teachers' final marking is affected by their impressions of students' language presentation embedded in their assignment responses. To reduce inaccuracies possibly contained in final marking, it is highly necessary for EMI subject course descriptions to make transparent the criteria used to mark student performance and the weighing involved with each criterion.

This weighing scheme must not be static but apply a developmental view across the whole span of EMI studies.

Teacher training

Teachers' professional practices may vary depending on their inherent epistemological beliefs (Dafouz & Smit, 2014). Before teachers can engage in instruction activities that can develop DLAS for students, they need to be versed in DLAS themselves. First and foremost, confusion needs to be clarified regarding the goals of EMI programs (i.e., knowledge construction) and the inseparability of language, disciplinary knowledge, and thinking competence, as well as interrelations of these core competences with contextual factors such as student motivation that determine the extents of students' learning engagement. Accordingly, language instructors may fail to understand that disciplinary knowledge, such as domain-general and domain-specific disciplinary knowledge (Cai & Kunnan, 2018), is an indispensable component for students if they are to engage in meaningful language training. Likewise, subject teachers may fail to understand that deficiency in language competence (e.g., lexical, syntactical, and textual knowledge related to the discipline) compromises the efficiency of knowledge construction if this deficiency cannot be identified and remedied in time. In a similar way, both language teachers and subject teachers may underestimate the importance of thinking competence, which underpins all human cognitive activities (Ennis, 1996).

Teacher development activities can provide both language and subject teachers in their early stages of teaching with the basic tenets of DLAS, as well as training to improve their recognition of the DLAS in their language or subject teaching practice. During this training, subject teachers and language teachers can be invited to elucidate their reflections on their subject teaching and language teaching, respectively, in line with DLAS. In addition, experts in thinking skills can be invited to teach both cohorts of teachers how to apply language skills and world knowledge to develop their own thinking skills as well as how to develop activities that can foster students' development of such higher-order thinking skills for knowledge construction.

Conclusion

Drawing on existing language ability theory and dynamic Systems Thinking (ST), this chapter proposes the DLAS as a link between language assessment theories and dynamic ST. The DLAS features two subsystems: a space system that accommodates the complex interaction among language competence, disciplinary knowledge, and thinking competence, and a temporal system that caters to the evolving nature of core components and the interaction mechanism. To explicate the features of the DLAS, the authors maintain seven features as the manifestation of the functioning of the DLAS: componentiality, interaction, nonlinearity, parallel pacing, dynamic interdependence, bipolarity,

and fluctuation. Componentiality recognizes the components that consist of the core of the DLAS. Interaction refers to the temporary interdependence (i.e., constraining, amplifying, and mediating) among these core components with contextual factors located in different levels of the ecological system. Nonlinearity depicts the developmental pattern independent of or dependent on each of the core components and contextual factors. Parallel pacing refers to the idea that each core component has the tendency to develop with its own tempo and magnitude. Dynamic interdependence means that the development of each core component may depend on the development of another component. This is the longitudinal correspondence to the temporal interdependence in a relatively static manner. Bipolarity refers to the opposite directions of a motion potential (e.g., the tendency to increase or to decrease) within the DLAS. Fluctuation suggests that the bipolar motion may switch between moving downward and moving upward. The authors also propose four types of validity for assessment practitioners: componentiality validity, interaction validity, progression validity, and bipolarity validity as aspects for researchers to validate DLAS assessment programs.

In the end of the chapter, the authors propose principles by which DLAS may be integrated into the EMI curriculum through curriculum development, classroom instruction, and teacher development. The authors acknowledge that this framework of DLAS is tentative and needs more intensive follow-ups, both theoretically and empirically. Nevertheless, the DLAS is a first attempt at language assessment, and should at least provide a prompt for future discussion in borrowing thoughts from ST to illuminate endeavors in language assessment against the backdrop of the global movement of EMI.

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9 Toward an effective transition to adopting English as the medium of instruction

A case from Hong Kong

Tae-Hee Choi and Bob Adamson

Introduction

In 2014, the Education University of Hong Kong (EdUHK), which is the main provider of teacher education in Hong Kong, introduced a new language policy that marked a major shift in practices away from the existing model dominated by Classical Written Chinese and spoken Cantonese as the medium of instruction (MoI). Approximately 80% of undergraduate courses were now to be delivered through English as the medium of instruction (EMI), with a transitional period of five years envisaged for the change to be enacted. The new policy caused some anxiety and curiosity among staff and students as to how the change might be implemented in ways that would facilitate effective learning. A working group of academics specializing in applied linguistics and language policy concluded that teaching courses through EMI would require very thorough preparation. The content provided in the new MoI might be unfamiliar to the students, so it was necessary to ensure that the concepts were made as clear as possible and that the students were taught the relevant language at the micro-level (e.g., vocabulary) and the macro-level (academic genres).

The shift to EMI in a place of learning where the local linguistic practices and landscape are predominantly characterized by other languages (in this case, the southern Chinese topolect, Cantonese, and the national language, the northern variety of Mandarin known as Putonghua) is an increasingly familiar phenomenon in higher education institutes (HEIs). Global trends associated with the ideology of neoliberalism have impacted the vision and mission, student body, curriculum, pedagogy, and academic work of many HEIs (Adamson, 2012), and processes of internationalization coupled with the criteria of different ranking systems have promoted the use of EMI (Cho, 2012). This move has proved controversial in Hong Kong, with findings showing the dangers of diluting students' learning (Taguchi, 2014), as well as prompting discussions of the issues of educational equity and lack of relevance to the multilingual reality (Kirkpatrick, 2014). The policy led to

students with higher English proficiency being prioritized for college admittance and learning opportunities. For an institute that exists primarily for the purposes of preparing teachers for the Hong Kong education system, where many of the professional activities require a high degree of competence in the local and, to a lesser extent, the national language, questions were raised over making English the primary medium of instruction.

This chapter analyzes the decision by the HEIs to adopt EMI, the response of various policy actors to the move, and the strategies that were put in place to support it. Our qualitative study comprises an analysis of the policy documents and responses to two surveys, one conducted at the institutional level and the other carried out by a constituent faculty. It highlights some outcomes that were deemed positive and others that were identified as significant challenges. The theoretical argument underpinning this chapter is that institutional isomorphism (labelled in this paper as “metamorphosis”) can be linked to forces such as globalization, whereby international trends result in HEIs becoming broadly similar in orientation and practices, with local variations according to context.

Knight (2015, p. 3) proposes a definition of globalization as “the flow of technology, economy, knowledge, people, values and ideas ... across borders. Globalization affects each country in a different way due to a nation’s individual history, traditions, culture and priorities.” This chapter adopts Knight’s definition, with an adaptation to take account of the fact that Hong Kong is not a country, but a Special Administrative Region (SAR)¹ of the People’s Republic of China. The Basic Law of Hong Kong acknowledges Hong Kong’s distinct history and permits it to maintain its own education system. We link globalization with the forces of neoliberalism, an ideology that seeks to break down international barriers to trade and which views education as a commodity rather than a public good (Adamson, 2012). The globalization ideology has impacted HEIs in a number of ways. Direct impact on HEIs include producing the massification of higher education and tightening the public financing of higher education. The indirect impacts are via the resulting new context of the ideology, such as arousing concerns over national economic competitiveness and creating new geopolitical blocs. Common manifestations of globalization that HEIs have either accepted, resisted or appropriated include their reconceptualization as business entities; competition in the form of, *inter alia*, international university ranking systems; the development of quality assurance systems that tend to be based on quantitative metrics; the proliferation of technical and utilitarian curricula and programs; internationalization of student bodies, curricula and campuses; and the increasing involvement of the private sector in the financing, management, and provision of higher education (Adamson, 2012).

This chapter starts by examining the rationale behind the move to EMI, and suggests that the decision was driven by socioeconomic rather than educational motives, which aroused the concerns of the lecturing staff and students. It then describes, analyzes, and evaluates the pedagogical ideas and

processes set out in the facilitative strategies (which included a staff handbook on implementing EMI written by the chapter authors, who were both recruited to groups set up to support the move). It presents an analysis of the feedback collected from staff and students concerning the enactment of the curriculum reform and identifies facilitators and barriers to effective change. It shows that an EMI initiative that is based on socioeconomic or political motives, as is often the case for many HEIs, engenders pedagogical consequences, but more importantly, HEIs considering such a move should prepare both students and staff thoroughly to minimize the processes of trial and error, for which a structured approach may be necessary. The insights, though situated within a university in Hong Kong, may have relevance to institutes in other contexts that are considering switching the MoI or which are already undergoing such a transition.

Language-in-education policies and globalization in Hong Kong HEIs

Language-in-education policies in Hong Kong have been influenced by its colonial and post-colonial status, by its current aspiration to be the “world city of Asia” (Hong Kong Government, n.d.) and by its strategic location as a gateway to mainland China (Bolton, 2011; Pennycook, 1998). Located off the coast of southern China, Hong Kong was administered by a British colonial government from 1841 to 1997, which led to English, spoken Cantonese, and Classical Written Chinese being the major languages taught in the schools (Kan & Adamson, 2010). In the 19th century, one role of education was to establish a bridge comprising an educated indigenous elite, who served as intermediaries between the colonial and local groups. This group received a schooling in which English was taught as the main language, complemented by studies of classical Chinese literature (Sweeting & Vickers, 2005). Otherwise, traditional village and community schools followed the curriculum of the Imperial Civil Service examinations in China that remained in place until the early 20th century. In these schools, pupils learned a highly stylized form of spoken Cantonese that was unlike the daily vernacular (Sweeting, 1990).

As Hong Kong developed its economy as an entrepôt port, a center for light industry (such as plastics and garments), and later, an international financial, commercial, and tourist hub, the linguistic complexities increased. Vernacular Cantonese became commonplace in many schools to help prepare the workforce for light industry, in line with the recommendations of the Burney Report (Burney, 1935). Several decades later, interactions with the rest of China enhanced the value of spoken Mandarin, the northern variety of Chinese that differs greatly from Cantonese, and of the use of simplified characters that are used in the People’s Republic of China, as the 1997 retrocession approached. Meanwhile, prestigious schools preferred to use EMI despite the problem of pupils having to learn through a linguistically distant language, and other schools endeavored to follow suit in order to enhance

their reputation with parents. One result was the proliferation of a mixed code (which would be labelled translanguaging in current terminology) in the classroom, and a concern that students were not developing as additive bilinguals (or, as the post-1997 government specifies, biliterates and trilinguals).

The general public has unique perceptions of these different languages and dialects. EMI is viewed as privileging an elite politically, socially, and economically, and (ironically) also as providing a pathway to social and international mobility. Cantonese is valued by some as a language that serves as a marker of Hong Kong identity, but is looked down on in some quarters as “a mere dialect” (Lo, 2014). Putonghua also carries some negative connotations. In colonial times, it was stigmatized by Hong Kong people as the language of poverty-stricken mainlanders, but this was later transformed into stigmatization of people who were perceived as boorish *nouveaux-riches* as China’s economy developed. It was also seen by some as the language of the Chinese government whose political ideology and designs on Hong Kong were viewed as incompatible with those that had made Hong Kong wealthy and stable.

One of the first official policies introduced by the new administration after the retrocession of Hong Kong to China was the encouragement of schools to use Chinese/Cantonese as the MoI. Tung Chee Hwa, the first chief executive of Hong Kong after the retrocession, laid out a language policy of fostering biliteracy and trilingualism, which involves Classical Written Chinese and written English, as well as spoken Cantonese, Putonghua, and English. The latter was retained on the basis that it is the major international language (Tung, 1999). Tung backed the use of mother-tongue education in schools, on the grounds that it would bring about more effective learning, but the idea was unpopular with school leaders and parents who feared that the prestige associated with EMI would be lost and students would be placed at a disadvantage when seeking admission to HEIs (Kan & Adamson, 2010; Poon, 2000). In 1998, the government was forced to accept a compromise whereby 114 (30%) secondary schools were allowed to retain their EMI policies and, from 2010 to 2011, schools were granted greater autonomy in determining their MoI (for details of policy development around the MoI in Hong Kong, see Choi, 2016; Choi & Kan, in press). This brief overview (which does not include discussion of ethnic minority groups from South Asia and Southeast Asia *inter alia* and other non-Chinese sections of the population) shows the politically fraught nature of discussions around the MoI.

Tertiary institutions have not entirely escaped controversies. Hong Kong University, established in 1911, is an EMI institution (Poon, 2003). The Chinese University of Hong Kong (whose name in Chinese represents a focus on Chinese language and culture) was set up in 1963, at a time when the Chinese language was gaining increased recognition in the education system (Sweeting, 1992). This university has wavered in its language policy, causing a controversy that started in 2005 when it announced a shift to EMI for a significant number of courses (Choi, 2010)—a shift that was reversed after a long campaign led by students, prominent alumni, and other public

figures. Such debates demonstrate how language-in-education policies have engendered tensions. A mixture of colonial practices and the socioeconomic value of English has resulted in six out of the eight government-funded universities declaring that their courses were delivered in EMI. The other two have adopted a bilingual or trilingual policy, but whether the policies have actually been implemented as intended is disputed (Yeung & Lu, 2018).

Meanwhile, social, political, and economic changes in Hong Kong have reshaped the HEIs in areas beyond the MoI, with global forces being most evident in recent decades. According to Cheung (2012), globalization has created at least four consequences for HEIs around the world:

- 1 ***“Follow the fashion or perish”***—Globalization is a growing and irresistible trend. Whether one likes it or not, one has to “follow” the trend in order not to lag behind or become sidelined.
- 2 ***“Competition and survival”***—Globalization has brought about a more competitive world because national boundaries nowadays can no longer deter the flow of people, expertise, and capital. Education, in particular higher education, is seen as crucial to nurturing the human capital necessary for international competition.
- 3 ***“Quality assurance and relevance”***—National education systems have been driven toward greater international involvement. Internationalization in terms of benchmarking against some world “standards” is seen as the key to the quality of education and to assuring alignment with global trends.
- 4 ***“Education sells”***—The advent of the new knowledge society and knowledge-based economy has spurred greater investment by national and global capital, both public and private, in knowledge industries including higher education. Internationalization has become a business opportunity as higher education turns into a foreign exchange-earning export.

This chapter uses a case study in order to capture the transition process of the MoI at the intersection of these two main streams of change—that is, language-in-education policy and globalization.

Case study: Transition of MoI within a globalizing HEI

The focus of this study is the leading provider of teacher education in Hong Kong. It used to be a teaching-intensive, local institute focusing on teacher preparation (University Grants Committee, 2015), but has transformed itself into a research-oriented, internationally focused university with a broad multidisciplinary remit that extends its main concentration on education (The Education University of Hong Kong, n.d.b). The metamorphosis to university status is part of a process that stretches back more than 150 years, covering the colonial and post-colonial eras in Hong Kong. The Hong Kong Institute of Education (HKIED) was founded in 1994, when four Colleges of

Education, one of which dates back to 1853, plus the Institute of Language in Education merged as part of an attempt by the Hong Kong government to raise the quality of education in schools. The new institute offered undergraduate and postgraduate diplomas in education programs, whereas the former colleges only offered sub-degree programs. As the institute matured, it declared its intention to seek university status, which was bestowed, after a decade of endeavor, in 2016 and it was renamed the Education University of Hong Kong (The Education University of Hong Kong, n.d.a).

An expansion of higher education took place in Hong Kong in the 1990s in response to growing demand from the middle-class and from the business community who wanted an upgrade in the quality of human resources emerging from the education system. City Polytechnic, Hong Kong Polytechnic, Lingnan College, and Hong Kong Baptist College all went through the process of being retitled as universities. This trend created an opportunity for the institute, as it provided precedence for its own retitling. A further significant breakthrough in the development of HKIED was the granting of self-accrediting status for teacher education programs in 2004. This event represented the trigger for the metamorphosis of the institute, as it permitted the development of higher degrees. The closer alignment and integration with the mainland post-1997 and the development of self-funded programs, facilitated by self-accrediting status, enabled the institute to enter the competitive Chinese market. However, marketing initiatives were hampered by the Chinese rendering of its name. “Institute of Education” may have had resonance with the prestigious Institute of Education in London, but, when translated into Chinese (教育學院), the name indicated (in the context of the mainland) a minor college rather than one aspiring to a prestigious international status. The senior management therefore decided that a change of name incorporating a university title was desirable. This change would require government approval.

Senior management put in place a number of strategies to achieve university status. There was a move to boost the number of staff with doctorates and to encourage more research output. Also, self-funded postgraduate programs, such as a Master’s degree in Education and a Doctorate in Education, were established. Corresponding quality assurance mechanisms were introduced to demonstrate that the research and teaching by the staff met international standards (University Grants Committee, 2015). The recruitment of professorial staff of international repute was another strategy. Hitherto, there were only a handful of professors in the whole institute, out of around 400 staff. The international recruitment boosted the number to 30, including some very prestigious chair professors. Having staff of this caliber meant that high-quality research would also need to be fostered and given greater attention, particularly in terms of winning external grants that would reflect creditably upon the university. Supportive financial and procedural measures were instituted to facilitate this process, as international research performance was a criterion used by the University Grants Committee.² Other incentives

included the desire to improve the institute's position in international university ranking exercises, and approaches made by HEIs outside of Hong Kong equally driven by the discourse of globalization and internationalization and looking for strategic partners.

The development of the mainland market, the recruitment of international staff and internationalizing the profile of the university meant that a rethink of the language policy (which had favored Cantonese as the MoI) was necessary. Putonghua and English were now significant languages in the institute, and a new language policy was adopted in 2009, based on the principles of functional biliteracy and trilingualism, which also matched the language competences encouraged by the Hong Kong government. The university policy document outlined different pathways that students could follow, according to how students identified their first, second, and third languages (L1, L2, and L3 respectively), with the expectation that they should reach set requirements for each language—the students should acquire a high level of competence in social, professional, and academic domains in their declared L1, good competence in the three domains in their L2, and developing competence in their L3. In practice, the flexibility in providing sufficient courses delivered across the three languages proved to be economically unviable, so the previous arrangement (largely Cantonese medium courses) was retained. However, a target of 25% of courses to be delivered through EMI was set for the 2011/2012 academic year and language exit requirements (LER) were established for the following academic year, set at IELTS 6.0 for English and 3B for the Putonghua Shuiping Ceshi (PSC). Exit requirements for students taking an English Language Education or Chinese Language Education major were set higher in the specialist language. A further target of 50% of courses to be taught through English was set for 2013/14 as part of an enhanced EMI scheme. The language policy further changed in 2014. To strengthen the institute's positioning in the final stages of its quest for university status, the senior management announced that English should be the major MoI. The move would be phased in gradually, with 80% of courses to be delivered through EMI by 2016/2017.

The transition

The switch to EMI, though gradual, created tensions among both students and staff. The university, to manage, monitor, and support the transition, created two policy bodies, one to design the policy and the other to implement it.³ These were led by senior members of the university, with representatives from each of the three faculties (education, liberal arts and social sciences, and humanities) and from the language center and independent advisors.

The policy bodies, in collaboration with the faculties and the language center, provided support for student learning, including courses to help students develop English proficiency in listening, reading, speaking, and writing, and to prepare them for the high-stakes International English

Language Testing System (IELTS) test. Other schemes and events aimed at motivating students to improve their language competences were established, such as an English Cafe, a buddy program which linked local students with international students, one-on-one tutorials with native-speaking teachers, and monetary rewards for achieving milestones in English proficiency. There was regular monitoring of students' proficiency development through a cross-institute English assessment program, and a database of the IELTS scores of the graduating students.

However, the support systems had limitations in addressing the concerns of students and of some staff members, as revealed in the surveys and a case study on the transition. After the new target of 80% EMI courses was set, the university took the initiative to assess the success of the transition. The EdUHK conducted a university-wide survey of approximately a third of the teaching staff at the time ($n=92$) and 5% of students ($n=205$) (EdUHK, 2014). The survey focused on whether the respondents agreed with the switch of the main MoI from Chinese to English and whether the LER for English should be made a requirement for all full-time undergraduate programs, so as to bar those who failed to reach a certain standard from obtaining a degree. The majority of both staff and students supported the MoI switch and the proposal to turn the English LER into a graduation requirement. The top two reasons given for these positive responses were the perceived benefits for the competitiveness of Hong Kong and for students mastering English as a key tool for social mobility. The majority of students (60%) reported no problem in learning in an EMI course.

When announced, this result was perceived to misalign with general concerns expressed by staff and students. Accordingly, one faculty conducted its own survey in the same year. The survey was conducted with students from all the departments of the university ($n=205$, again 5%), though for convenience of sampling, only the staff of that faculty was surveyed ($n=13$). While the university-level survey items focused on general perceptions, the items of the faculty-led survey asked more about students' learning experiences. Perhaps partly because of the differing foci, in contrast to only 40% of students reporting challenges in learning through EMI in the university-led survey, the majority (86%) expressed their concerns about learning through EMI in the faculty-level survey. When asked explicitly about the areas needing support, the students identified the following three needs:

- developing deep understanding of the content;
- developing skills for writing English, as the main mode of assessment is written essays; and
- mitigating anxieties experienced during the EMI classes.

The survey also revealed another important yet problematic area in terms of providing support for an effective transition, that is, support for teachers.

In order to establish ways to support the identified learning needs, follow-up interviews with students with different self-reported English proficiencies were conducted. The original survey included an invitation to participate in the follow-up interview. Out of nine volunteers—all with Cantonese as their mother tongue—six students, two each from each level of English proficiency, were approached. It was expected that their experience with EMI may have been affected by their English proficiency (e.g., Cho, 2012).

In the interviews, several useful teaching strategies were mentioned, many of which emphasized the importance of using the mother tongue as a “learning resource” (Choi & Leung, 2017). The first strategy was for the students to switch to Cantonese or Mandarin when dealing with abstract or complex theories, or concerning local topics, in lectures as well as during tutorials. One student noted their practice of code-switching and the reasons:

If we can discuss in Cantonese then it’s easier for us to understand what people want to say, because some students are not very good at English and if they must speak in English we cannot understand what [they are] trying to tell us.

An argument put forward by another student was that certain subjects should be taught in Chinese anyway, such as those that are more personal and less academic:

I have heard that some GE [General Education] courses are about daily life and I think that these courses should be conducted in Chinese and Cantonese since topics will be related to ourselves.

Some instructors seemed to agree with this argument, as the same student observed:

In my major, there are some foreigners, so all their courses are in English. But sometimes, other professors might [speak in] Cantonese or sometimes Putonghua.

A common request from the students interviewed was for the provision of materials and instruction in a bilingual mode, especially a glossary of key words, to help themselves or their peers to link the new content to their existing knowledge. Although the students had attained the proficiency standards in English for university admission and had attended mandatory language courses in their first year, many struggled to get to grips with academic discourse in the language. They felt that a bilingual approach would be beneficial for both motivation and effective learning. Some requested supplementary written Chinese materials for the same reasons. A psychology major reflected on a recent class, stating:

...in English I just cannot understand at all. And I had no time to check each word because there were 60 slides in the PowerPoint, and on each slide there were five to ten words that I didn't understand.

Another student felt that a bilingual approach would not only provide better learning support for the students, it would also be more equitable:

I think bilingualism is necessary. Because actually ... although I came from an EMI secondary school, there are some students who received their secondary education in Chinese, so those students might be relatively weaker at English. ... And I think full EMI shouldn't be a hard rule because it's not fair [to them].

Teachers' performance was also problematized. Some teachers were perceived by the students as needing support, because EMI constrained their range of teaching strategies:

The class duration is three hours and I see [the professor] every Tuesday evening from half past six to half past nine, and she just holds the paper and reads her script for three hours.

One of the measures taken to support the shift in language policy was the production of a handbook (Choi & Adamson, 2015) and other resources to support staff teaching courses through EMI. The handbook linked two dominant ideas in Hong Kong education at the time: task-based learning and outcome-based learning. Task-based learning was introduced into the primary school curriculum (known as the Target Oriented Curriculum) in 1995, in English, Chinese, and Mathematics. Although controversial at the time in Hong Kong (Adamson et al., 2000) as well as elsewhere (Choi, 2017a), the approach persisted in subsequent curricular reforms at both the primary and secondary levels. The design of the materials set out in the EMI handbook thus sought to take advantage of the familiarity of many staff in EdUHK with local school curricula. Outcome-based learning was an initiative emanating from the University Grants Committee and had been adopted by the university as a policy to sharpen the focus of course curricula by aligning intended learning outcomes, teaching and learning arrangements, and assessment (Kennedy, 2011).

The handbook, which was published online as well as in hard copies distributed to all staff, outlined a process using a genre-based pedagogy, with principles derived from social constructivist theories of learning. These principles suggest that students construct knowledge most effectively when the new learning falls within their zone of proximal development (ZPD) (Vygotsky, 1978), comes through interactions with peers, structured in supportive ways (Wilson & Yang, 2007), and is delivered with judicious use of

the mother tongue (Choi & Leung, 2017). The handbook laid out a four-step approach:

- 1 linking intended course learning outcomes to language;
- 2 presenting intended learning outcomes through appropriate text-types;
- 3 presenting the content with a focus on relevant language;
- 4 scaffolding the students' active learning of the content and language.

A range of other resources was also produced, gathered, and made available online. These reflected the two principles which also informed the handbook, that is, promotion of student autonomy and use of the mother tongue as teaching resources. They included a handout listing key expressions for students' use in the EMI learning process, covering topics such as sharing learning challenges with teachers and asking for clarification; academic phrases for essay writing; and sample bilingual lists with key words in Chinese (for sample resources, see <http://eduhk.hk/moi/>).

To help both teachers and students learn about these resources, annual sharing sessions were conducted introducing the resources and pedagogic approaches for three successive years. Meanwhile, other changes at a more macro-level were suggested by the task force on language policy implementation to the senior management, including documenting all initiatives undertaken at the sub-university level and circulating the information centrally. Another move was integrating the students' language portfolios into their existing learning portfolios which are developed throughout the degree program, so that they can actively plan out and self-assess their language learning and the language center can provide systematic, coherent, and customized support.

All the initiatives brought about positive outcomes for the university. During the regular university review exercise conducted by the University Grants Committee, the university was congratulated on a successful transition regarding the MoI with thorough language policy planning and implementation, which resulted in the university receiving favorable newspaper headlines. For senior management sensitive to public image, this represented a major step forward from the previous negativity in the media on this subject. The university, having recruited international students and high-performing scholars locally, regionally, and internationally, attained elevated positions in different HEI ranking indexes, which had a knock-on effect in attracting better-quality doctoral students and staff. The rise in international profile strengthened the policy momentum for EMI.

However, new issues arose with the changes. With a more prominent international profile and most courses being offered in English, the university's connections with, and commitment to, the needs of the local education sector have come under scrutiny. From time to time, students have questioned the justification for teaching and learning mainly in English when they will mostly

likely work at local or mainland schools which use Chinese as the medium of instruction and deal with issues with parents and the community in Chinese. Collegial discussions on professional issues are also more likely to be in Cantonese or Mandarin. In terms of learning, it is debatable whether the university's language policy is actually helping student teachers to fully develop as professionals, given that professionalism is strongly connected with identity formation (Choi, 2017a), which in turn requires the students to probe and reflect on their own thoughts and emotions, as well as acquiring deep understanding of relevant content and pedagogical skills. There is an ongoing discussion arising from making the language exit requirements a requirement for graduation, and this policy change has been put on hold. The policy, if adopted, might end up unduly rewarding students who are gifted in languages, while penalizing the rest.

Such phenomena associated with adopting EMI are obviously not unique to this university. Indeed, when a society emphasizes English proficiency disproportionately, similar initiatives are bound to find themselves on the policy agenda, even though they require sacrificing other important elements of teaching and learning. For instance, when the Teaching English in English in-service certification scheme in South Korea was first trialed, the English proficiency of teachers was emphasized to the extent that their other teaching competences, such as their ability to engage students in learning, were not considered. As a consequence, fresh recruits with high English proficiency benefitted (Choi, 2015), though later the limitation of the scheme was revised to assess teachers' competencies more holistically (Choi, 2017b).

Discussion and conclusion

This chapter has shown how internal forces driven by the aspiration to seek university status and market teacher education programs in the mainland became entangled with the complex external forces of globalization. This resulted in a metamorphosis of the university that began the initiative. The new policy involved significant repositioning, in addition to the main MoI, including moves

- from a local to regional/international sphere of activity;
- from a local to regional/international staffing profile;
- from single-discipline to multi-discipline;
- from teaching-focused to research-focused; and
- from non-commercial to commercial enterprises.

These shifts essentially redefined the nature of the university and have produced a number of tensions, in both intended and unintended areas. The new sphere of regional/international activity is in conflict with the traditional role of serving the local education community; a fine balance needs to be achieved to maintain the university's efficacy as a provider of teacher education. The

recruitment of university staff from outside Hong Kong and the move toward multi-disciplinary studies have raised questions in some quarters about the ability of such staff and programs to make a relevant contribution to local teacher education, especially as some of the new staff have neither a degree in education nor previous teaching experience. For instance, staff were assigned to assess students' teaching performance during their attachment to schools, an integral part of most degrees in education. However, since some of them had no relevant training, experience or knowledge of the local educational system, the reliability and validity of their assessment was questioned, which led to the decision that only people with a local teaching certificate or relevant substantial experience should be assigned to assess teaching, and those without were asked to participate in in-service training. Some long-serving colleagues and members of the community accordingly raised concerns about the possibility of "mission drift." They suggested that the university is moving away from its core mission of teacher education because of the demands of achieving university status. Associated with this are tensions among staff concerning budget allocation, with the new professors being generously resourced to undertake research in their fields, while staff in the teaching track have felt marginalized. The changes in the MoI that have emerged in this process of metamorphosis have presented linguistic challenges to some staff. There is also the necessity of making linguistic and cultural changes to the campus environment and student support to cater to non-Cantonese speakers. The recent branding of the institute repositions it as a commercial entity and suggests a new relationship between "service providers" and "customers" rather than between "teachers" and "students."

The process for this case university to adopt EMI as its main MoI policy, mostly driven by its motivation to survive and flourish in the nexus of diverse forces generated by globalization, as well as an institutional socio-political drive, required a pedagogical readjustment. Indeed, the decisions made by senior management in the HEIs reflect these factors. The measures engendered some welcome successes, but also raised some new questions. Although these questions about the nature and role of the university were generated in a single small university in a specific set of circumstances in Hong Kong, they nevertheless have implications in many HEIs around the world facing the similar challenge to follow the trends of globalization or perish. The outcomes of the process described in this chapter emphasize the iterative and organic nature of education reforms, and, therefore, the need to examine the reform context thoroughly in advance, and evaluate the reforms continuously given the creative nature of the actual interpretation and translation of reforms to suit contextual features. Implementers of these processes might be advised to draw on a systematic framework of analysis to minimize the reform costs (see Choi, 2018, for a language-in-education reform analysis framework). While an EMI policy is a glittering symbol of a modern, international HEI, there are consequences that threaten the local relevance and, indeed, the original *raison d'être* of some institutes, and that require circumspection in implementation.

Notes

- 1 SAR is a legal arrangement established to facilitate the retrocession of Hong Kong at the end of the British colonial era.
- 2 The University Grants Committee is an agency set up by the government to manage university affairs in Hong Kong, including determination of the annual budgets for the eight government-funded universities.
- 3 The latter was integrated into the Steering Group on Undergraduate Common Curriculum in 2018.

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10 Conclusion

Dynamic interactions across academic disciplines

Hintat Cheung

To summarize the discussions on the implementation of EMI in two Chinese-speaking communities in this volume, the ROAD-MAPPING framework (Dafouz & Smit, 2016, 2020) is adopted here in order to capture a dynamic understanding of the practice and process of EMI made by agents from different academic disciplines and with different perspectives. The six dimensions in the framework for elaborating the co-construction of the discourse on EMI are shown in Table 10.1.

Our summary starts at the last dimension in the table, Internationalization and Globalization (ING). ING is spelled out quite clearly in Chapter 1. In Taiwan, the goals of EMI as a language-in-education policy are “to promote college students’ English proficiency and broaden their international perspectives.” Meanwhile, in Hong Kong, internationalization in higher education is further envisioned as aiding the city’s development into a regional education hub. However, while the reports from Taiwan are jointly prepared by language specialists and content experts of these academic disciplines, they have the first goal, English as a means for internationalization, as their common interest. The promotion of college students’ English proficiency per se is relegated. Against this backdrop, reports from six different academic disciplines—namely, the medical sciences, math, information engineering, business, education, and linguistics—reveal various practices and processes in the implementation of EMI, which can also be broadly seen as pitching at two different levels: discipline/institution level and course/program level.

Practice and process of EMI at the discipline/institution level

At the discipline/institution level, a wide spectrum of practices is presented, with medical school at one end and linguistics and education programs at the other. A plug-in approach is found in the implementation of EMI in medical schools (reported in Chapter 2), in which EMI is viewed as an external entity to be attached to the existing education program. A balance between strong expert knowledge in medical science and good English skills is required, but without calling for major changes in the curriculum structure

Table 10.1 Conceptual dimensions of ROAD-MAPPING

Roles of English	RO	Refers to the diverse communicative functions that language fulfills in HEIs.
Academic disciplines	AD	Encompasses two-related notions: academic literacies (products developed in an educational setting) and academic culture (specific conventions, norms, and values that define the discipline).
(Language) Management	M	Refers to the language policy statements and documents and the body that controls and manipulates the language situation.
Agents	A	Encompasses the different social players that are engaged.
Practices and processes	PP	Encompasses an extremely broad category with many different teaching formats (e.g., teacher-fronted lectures, small seminar discussions, blended learning), diverse assessment methods, and distinct educational cultures.
Internationalization and globalization	ING	Refers to the different forces (i.e., local and global) that are operating simultaneously in most 21st century HEIs.

Source: Adapted from Dafouz & Smit (2020, p. 60)

or introduction of new pedagogical approaches, EMI courses are sidelined and then streamlined with the original medical education plan. Three levels of EMI courses, with a progression from general/liberal subjects to discipline-specific clinical studies, are suggested accordingly. Due to the heavy course work for fulfilling the professional qualifications of a medical doctor, the number of credit hours for EMI is limited. The provision of additional extra-curricular support for creating a positive environment in which local and international students can spontaneously communicate in English is another policy that could be implemented at the institutional level.

The case report on the transition to EMI in an institute of education in Hong Kong (Chapter 9) stands at the other end of the spectrum and can be taken as the flip side of the plug-in practice. There, EMI is reported to be a means for promoting the overall academic standing of the institution in the discipline of education. Various measures planned at the institutional level were adopted, including a language graduation requirement, provision of additional language enhancement programs, and further learning and teaching support. The role of English has thus gone beyond its functions in the teaching and learning of the disciplinary knowledge. It bears a strategic role in recruiting international students and academic staff, which in turn have direct consequences on the ranking of the institution. With the implementation managed at the institutional level, the vast effort invested is understandable.

The survey study of teachers' and students' feedback on the learning outcomes of linguistics courses in EMI (Chapter 6) shows another different scenario. Instead of reviewing the pros and cons of different methods and techniques, discussions were directed toward the effectiveness of EMI as a knowledge-making practice, which suggests that EMI is already infused in the teaching and learning activities of linguistic courses in the participating universities, and therefore there is no need to return to issues often addressed at the preparation stage. With the conclusion that "complete input of specialized knowledge should take precedence over the learning of language or globalization," suggestions for optimizing EMI in linguistics courses are made. Apparently, the switch from CMI (C for Chinese) to EMI in linguistics has not had a strong impact on the curriculum structure of the programs concerned, and the current focus is to provide supportive measures for individual teachers and students to optimize learning outcomes.

A quick comparison of the reports from the above three academic disciplines reveals how the role of English at the discipline/institution level can drive practices and processes. In the case study of the transition to EMI in an institute of education, discussed in Chapter 9, the role of English is complicated. The rationale for adopting EMI in this case is the promotion of internationalization, which serves as one of the means for attaining a higher academic standing. On the other hand, it is reported that the role of English at a medical university is relatively simple and straightforward. The utmost target of teachers and students of medical sciences is a high-quality medical education that can lead to professional qualification as a medical doctor, a process in which English language proficiency is not assessed. EMI courses in medicine can enrich students' professional careers in terms of internationalization but there is no immediate need that can drive this endeavor. The plug-in approach is a practical choice here, in that the scope of implementation can be controlled and any detrimental effects to the existing medical education program can be minimized. The same view of upholding high-quality training in disciplinary knowledge is shared by linguistics teachers. However, the switch from CMI to EMI is not deemed costly or high-stakes. In fact, English skills in general are considered important in language departments in Taiwan, for students who major in English as well as in other languages. A good command of English, as associated with a successful implementation of EMI, is an asset for students and teachers of language departments; therefore, a balance between the acquisition of the disciplinary knowledge in linguistics and an enhancement of students' English proficiency can definitely be maintained.

Practice and process of EMI at course/program level

Of the three reports on the practice and process of EMI at the course level, two concern writing. The training of writing research proposals for graduate students of information engineering (Chapter 3) is a hybrid of EAP and

translanguaging (Garcia, 2009). In this program, the role of students' first language in the development of thinking skills is in the limelight, but still the English language specialist plays an equally important role in the delivery of the research proposal. On the other hand, the summary writing program for undergraduate students of mathematics, discussed in Chapter 4, follows a more typical EAP approach. The course is jointly developed by a content expert and a language specialist and the focus of the training is in the writing process in academic English. As for EMI in a business school, attention is given to fostering students' skills in interactive communication conducted in English.

A transdisciplinary analysis of practice and process

From the practices and processes summarized above, we can see that each discipline has its own expectations of a successful EMI program, as viewed both at the discipline/institution and course/program levels. To some extent, the expectations can be considered to be the epistemological characteristics of these disciplines. In positioning the disciplinary nature of linguistics to allow for a comparison with the EMI outcomes of other disciplines, the hard/soft, pure/applied classification in knowledge-making practices proposed by Neumann et al. (2002) was introduced. The adoption of this classification served well as a good starting point to understand the various practices in different academic disciplines. For instance, our expectations that business management and information engineering will have different emphases in the development of EMI matches this classification scheme well, demonstrating the differences between a soft-applied discipline and a hard-applied one. Yet, for the wider spectrum of practices and processes observed in this volume, the discipline-specific knowledge-making practice is just one of the driving forces. Agents' expectations on the outcomes of the target disciplinary training and relevant vocational/professional qualifications also play a role. For example, both the medical sciences and information engineering are hard-applied subjects, but only the latter has shown a deep level of engagement in developing a new pedagogical approach in research method classes. The professional standard in medical education apparently outweighs the benefits of EMI. For soft-applied subjects, practices in education and business are found to be different also. Supplementary packages to support discipline-specific language use in the education discipline are produced to help content teachers to deliver better EMI classes. On the other hand, efforts for a deeper integration of English, including the use of local business cases presented in English medium and measures for enhancing students' interaction skills in English, are reported in the business discipline.

Two points need to be considered for conducting transdisciplinary analyses in the future. The first point is the scope of academic disciplines addressed in this volume. By no means can the six disciplines covered in this book be considered a good sample of the wide spectrum of EMI practices in

institutions of higher education. Nevertheless, they do display the dynamic interactions among academic disciplines, which point to a more complex picture. If more disciplines are involved in future research, it will require further investigation into the classification of disciplines and how they interact with other dimensions that were conceptualized in the ROAD-MAPPING framework.

Second, the interactions observed in the reports here may have involved a latent variable that connected the management role of the participating agents and the relative academic standing of their disciplines within the university. The two levels of practices, the discipline/institution level and course/program level, introduced in the beginning of this chapter, might reflect the agents' own roles or past experiences in the management of the EMI policy. For example, two reports in this volume, one from the medical sciences and one from education, were prepared by content experts who participated in the formulation and management of EMI policy at the institutional level. With such experience, it is quite natural that their discussions are pitched at the institutional level, and with a lens that captures a broader view of the discipline. Furthermore, in most situations, when an EMI policy is prepared, key stakeholders of the university, which includes representatives from academic disciplines that are higher in academic standing within the institution, are involved. Therefore, their voices should usually be heard and be considered in the formulation and implementation of the policy. In other words, a transdisciplinary analysis of the practices and processes in EMI needs to be ecologically sensitive so as to capture the dynamic interactions between the inhabitants of different academic disciplines.

Implications for the formulation and implementation of EMI policy

The reports of the six disciplines covered in this book reveal a complex picture of dynamic interactions across academic disciplines. Each discipline, following its disciplinary tradition, has its own expectations for employing EMI as a means for internationalization. Different participating agents show their own preferences in weighing the role of the first language, the significance of classroom structure, as well as supportive measures. These variations underscore the limitation of a top-down, "one-size-fits-all" language policy for EMI, a remark that is commonly found in the literature (Björkman, 2014). A comprehensive university is constituted of a wide spectrum of disciplines, both hard and soft, pure and applied. It is a daunting task to formulate a university-wide policy that by itself can accommodate the wide range of discipline-specific practices and expectations. To ameliorate this shortfall, the implementation of the policy should be supported by a well-resourced management structure that involves a wide participation of most disciplines within the institution, with a platform in which the top-down drives and bottom-up currents meet. For example, this platform could be tasked with developing a common framework that includes a language assessment system for EMI (Chapter 8) as well

as a professional development program in assessment literacy (Chapter 7). Assessing students' readiness for EMI in a specific discipline is more than a language placement test. It highlights the deeply interwoven relationship between disciplinary knowledge and language use, and the participation of disciplinary experts is required. Such frameworks and assessments will then lead to a community of practice in which subject teachers can plan for EMI courses and evaluate their own teaching practices. Fine-grained measures for enhancement of teaching and learning in EMI can be developed as well. A two-way street will be formed, in which the implementation of EMI not only benefits the English language teaching (ELT) profession with their best practices but also leads to innovative practices of its own. Last but not least, as the ecosystems involved in EMI are fast-changing, universities need to remain reflective and are advised to conduct self-evaluation (see Appendix : A checklist for EMI readiness, for example) periodically.

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Appendix

A checklist for EMI readiness (including the readiness of teachers and institutions/universities)

- **Readiness of universities/institutions**

The universities/institutions...

	<i>Strongly disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
• Have provided clear rationales for implementing EMI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have established well-specified EMI goals that are comprehensible to all stakeholders (e.g., the university, the department, the teachers, and the students)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have fostered a campus/environment that is conducive to international exchanges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Maintain constant communication with the stakeholders about the expected goals of EMI and the stakeholders' needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have sufficient qualified EMI teachers, which includes recruiting new EMI teachers and providing pedagogical training for current teachers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have established an appropriate appraisal/promotion system for EMI teachers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have reviewed and revamped the curriculum in terms of disciplinary-specific learning outcomes in EMI, requirements/expectations of students' English proficiency, and provision of teaching and learning resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have provided language support or resources to administrative personnel, teachers, and students (e.g., EAP/ESP courses for students)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have constructed an evaluation system to assess the effectiveness of EMI programs in relation to its expected goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

• **Readiness of teachers**

The teachers...

	<i>Strongly disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
• Have a clear understanding of the EMI policy in terms of its rationale and purpose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have a clear understanding of the role of English (in relation to other languages, e.g., students' L1) in their discipline and its professional domains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Demonstrate a certain level of English proficiency that allows them to effectively give lectures in English and manage classroom interactions (including discussions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Possess pedagogical skills that can address EFL learners' language-related learning issues (e.g., EFL skills, translanguaging skills, and use of multimodal resources)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Receive sufficient support to develop appropriate teaching materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Have developed intercultural awareness and knowledge that help to manage students with diverse cultural backgrounds in an internationalized classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Index

Note: Page numbers in *italics* and **bold** refer to figures and tables, respectively.

- academic: competencies 2; motivation 143; motivation factors 151; presentations 38; reading 37; vocabulary 53, 63, 73, 124, 152
- academically-oriented curriculum 91
- Academic Writing Education Center (AWEC) 47
- Airey, J. 97, 100
- “applied soft” knowledge 115n2
- article comprehension 37
- Asian universities, EMI in 5–6, 62; *see also specific universities*
- Asia-Pacific higher education sector 61
- assessment for learning 132, 135–136
- assessment in Chinese-speaking contexts 124–125; assessment practices 125; bilingual assessment 133; communication of 131; effective feedback 134; English in instruction and assessment 130–131; evaluative criteria 131–132; learning-oriented approach to assessment 128–130; LOA approach 130–136; practices 125–128; professional development of EMI teachers 134–136; students’ English difficulties 132–134
- Assessment Standards 7
- Barnard, R. 13, 134
- Bernstein, B. 100, 112
- bilingual assessment 133
- bilingualism 44
- biliteracy 164
- bipolarity validity 150
- Bloom’s taxonomy of educational objectives 126
- Bologna Declaration 4
- business communication and decisions 78
- business management field 78–79; case study sessions 85; diverse student backgrounds 81; implementing EMI in 79–81; inclusion of business cases 82–83; instructional practices 93; large class size 81–82; promoting interaction in EMI courses 84–90; questions to engage students in learning process 88–91; research on interaction in the EMI classroom 83–84; team projects 85–88
- Byun, K. 5, 100
- Cai, Y. 143, 149–152
- Cantonese 9, 68, 161, 164
- case study sessions 86, 86; *dos and don’ts* **87**
- CDST *see* Complex Dynamic Systems Theory (CDST)
- Cheung, H. T. 143, 150
- Chin, S. 21–22, 25
- China: bilingual course 2; Chinese, use of 108; economy 164; EMI in 7, 62, 101; Special Administrative Region (SAR) of 162; universities in 5–6; *see also* Hong Kong; Taiwan
- Chinese–English bilingual courses 80
- Chinese instruction 108
- Chinese-medium-instruction (CMI) 83, 101, 106
- Chinese-speaking contexts 125
- Chinese-speaking students 25, 128
- CLA *see* communicative language ability (CLA)

- Classical Written Chinese 161
 classroom assessment 125–126
 classroom language (CL) 12
 CLIL *see* Content and Language Integrated Learning (CLIL)
 code-switching 134
 cognitive complexity 126
 cold-calling strategy 89–90, 90
 communication skills 85
 communicative competence 142
 communicative language ability (CLA) 142
 Complex Dynamic Systems Theory (CDST) 144
 componential competences 147
 computational linguistics 98
 computer-literacy skills 113
 construct-representation procedure 148
 content: structure 54; teachers 15
 Content and Language Integrated Learning (CLIL) 1, 13, 42
 cooperative learning 88
 corpus/computational linguistics 108
 Corpus Linguistics 108
 co-teaching 62
 course outlines 151
 critical thinking 37
 critical writing 39
 curriculum: academically-oriented curriculum 91; design 28, 29–32, 84, 151; development 101, 151; development of EMI 101; EMI language curriculum 151–152; internationalization of 13, 28; Steering Group on Undergraduate Common Curriculum 174n3
- Dearden, J. 1–3, 13, 45, 125
 demotivated students 83
 disciplinary knowledge 142–143, 152
 disciplinary language 42
 disciplinary literacy 112
 discipline-specific information 10, 52
 discipline-related language 150
 discipline-related linguistic patterns 153
 discipline-specific discourse in English 129
 discipline-specific English: competence 15; language courses 63
 discipline-specific knowledge-making practice 180
 discipline-specific language 61; courses 72; learning 63–64, 73, 75; needs 75–76; proficiency 67–68; skills 74; use 180
 discipline-specific summary writing: platform 65; project 72; workshops 69–71
 discourse competence 142
 discourse studies 98
 diverse language practices 3
 DLAS *see* Dynamic Language Ability System (DLAS)
 domain-general disciplinary knowledge 152
 domain loss and capacity attrition 97
 dominant language ability theory 143
 “double bind” predicament 10
 dual-medium education model 134
 Dynamic Language Ability System (DLAS) 16, 142, 145–146, 155–156; background knowledge 145; bipolarity 145; components 145; dynamic interdependence 145; EMI instruction pedagogy 152–155; EMI language curriculum 151–152; features 145–146; fluctuation 145; language competence 145; parallel pacing 145; principles 146–147; progressive assessment of 148; strategic competence 145; teacher training 155; thinking competence 145; transitional structure of 147; validity of 147–151
- EAP *see* English for academic purposes (EAP)
 educational assessment 147
 educational internationalization *see* internationalization
 education system 144
 Education University of Hong Kong (EdUHK) 161, 166, 185
 EEP *see* English enhancement programs (EEP)
 EFL *see* English as a foreign language (EFL)
 EMI *see* English as a medium of instruction (EMI)
 end-of-semester: evaluation 51; questionnaire-based evaluations 56
 English: ability 54–55; academic lingua franca 5; for academic presentations 38; for Academic Purposes courses 72; for academic reading 37; for academic writing 38–39; courses 34; focus of assessment 128, 131; hegemonic

- language 5; imbalance in English ability 55; instructional language 10; instructors' ability 109; learning materials 107; lingua franca 22, 27, 78; proficiency 2, 48, 105, 141; remedial courses 63; role in education 1; training 105–106; when to use 107–108
- English as a foreign language (EFL) 2, 133
- English as a medium of instruction (EMI): aim of 2; in Asian universities 5–6; benefits of 66–67; challenges 67–69; checklist for EMI readiness 183–184; in China 7; Chinese-speaking contexts 2, 5–11, 130; classrooms 11, 84, 125; components in development of courses 28, 28–36; courses 34, 85; curriculum development of 101, 151; defined 1–2, 124; disciplinary variation 100; discipline/institution level 177–179; discipline-specific pedagogical issues 13–14; effectiveness 2–3; in EFL countries 3–4; in European universities 4–5; in higher education (HE) 6, 62, 83, 97; in Hong Kong 8–10, 14; implementation 52; Japan 5–6; language use 141; in NNES contexts 1–4; non-anglophone countries 97; “one-size-fits-all” language policy 181; pedagogical practice 44, 112; practice, distinction among disciplines in 100; rethinking the means-end value of 11–13; Singapore 6–7; South Korea 5–6; in Taiwan 8, 14; in tertiary education 3–4, 11; transdisciplinary analysis 180–181; translanguaging-informed approach 12
- English-based courses 93
- English enhancement programs (EEP) 141
- English for academic purposes (EAP) 10, 21, 42
- English for specific purposes (ESP) 10, 21; in engineering education 42
- English-immersion program 124
- English language: competence 62; enhancement 143; proficiency 67, 79, 179
- English language teaching (ELT) profession 182
- English-speaking proficiency 82
- English-taught programs (ETPs) 4, 17n2
- ESP *see* English for specific purposes (ESP)
- ETPs *see* English-taught programs (ETPs)
- European Economic Community 62
- European universities, EMI in 4–5
- Evans, S. 9, 52, 63
- examination culture in Chinese societies 135
- extracurricular support 28, 28–29
- feedback 134; language errors 134
- formative assessment 146
- functional assessment 134
- functional linguistics 111
- General English Proficiency Test (GEPT) 46, 106; advanced level 123; GEPT rubrics 106–107; high-intermediate level 123; intermediate level 123; level descriptions 123
- General Scholastic Ability Test (GSAT) 32
- GEPT *see* General English Proficiency Test (GEPT)
- globalization 43, 51, 162, 167; consequences for HEIs 165; language-in-education policy and 165
- global language 52
- “golden mean” philosophy of Aristotle 150–151
- grammatical competence 142
- Hakka 32
- hands-on demonstrations 133
- “hard applied” sciences 114n2
- “hard pure” sciences 114n2
- Harvard Law School 82
- higher education institutes (HEIs) 161, 163
- higher education (HE) internationalization 4, 9, 17n1
- higher-order questions 88
- higher-order thinking skills 155
- high-order academic writing 72
- Hokkien 32
- Hong Kong 161–163; Chinese-as-L1 contexts of 17; discipline-specific language 61; discipline-specific summary writing workshops 66; education system 162; Education University of Hong Kong (EdUHK) 161, 168; EMI education in the

- university 66; EMI in 6, 8–10, 14, 64; government-funded universities 165; higher education context 15; higher education institutes (HEIs) 161; Hong Kong Institute of Education (HKIEd) 166; Institute of Language in Education 166; language-in-education policies and globalization 163–165; language policy of bi-literacy 9; official language 8; online summary writing 66; Steering Group on Undergraduate Common Curriculum 174n3; teacher education in 161; transition of MoI 165–172; transition of MoI within globalizing HEI 165–172; tri-lingualism 9; University Grants Committee 174n2
- hospital-based training 23
- Hu, G. 62, 101, 125
- in-class assignments 83
- inclusive language practices 3
- information engineering 58
- information engineering students 42–45, 54–57; departmental EMI practices 45–47; TWRM 47–54
- information technology 113
- in-house developmental program 135
- in-service teachers 80
- institutional isomorphism 162
- instructional language 124
- instructional objectives 91
- instruction of disciplinary knowledge 114
- instructor: dominated lecture format 88; English ability 109; English proficiency 113
- interactional linguistics 111
- interactions, pedagogical guidelines 79
- interactive classroom activities 92
- intercultural competence 124
- interdisciplinary collaboration 49
- International English Language Testing System (IELTS) 81, 167–168
- internationalization 21–23, 46, 62, 78, 97, 124, 141, 167, 181
- Internationalization and Globalization (ING) 177
- internationalization of curriculum 13, 28
- internationalization of universities 5–6, 14, 29
- internationally-oriented skills 6
- intra-team discussion tasks 85
- ipsative assessment 146
- Island Ridge Curve (IRC) 149, 151
- Jacobs' scale 154
- Japan: Global 30 Project, 2009 5; Top Global University Project, 2014 5
- Kirkpatrick, A. 9, 12
- Knight, J. 17n1, 162
- knowledge-making practices 98, 179
- Korea: EMI in 5–6; internationalization of universities 6; Korean engineering professors 43
- Korean-medium instruction 43
- Kunnan, A. J. 149, 151–152
- Kuteeva, M. 97, 100
- “laissez-faire” approach 9
- language: acquisition 98, 111; assessments 143, 147; choices in TWRM 51–54; codes 100, 112; competence 142; content in 136; deficiency 141; errors 128; graduation requirement 178; instructors 50, 153, 155; proficiency 48, 67; self-concept 151
- language ability 136, 142–143; systems thinking 144; theories 143–144
- language exit requirements (LER) 167
- Language for Specific Purposes (LSP) 142
- language-in-education policies 163–165, 177
- learner-centered approach 136
- learner-centered environment 83
- learners' autonomy 129
- learning: anxiety 43; math pedagogy 67; styles 84
- learning-oriented assessment (LOA) 125, 128–129, 137; assessment 131; classroom in Chinese-speaking contexts 130–136; EMI teachers in Chinese-speaking contexts 130; English, role of in instruction and assessment 130–131; evaluative criteria 131–132; feedback 134; foreign language classroom stresses 132; foreign language learning classroom 129; language learners' engagement 129; professional development of EMI teachers 134–136
- lecture-based teaching 136
- Lei, J. 62, 101

- Li, N. 21–22, 25, 127, 131, 133–134
 Lin, A. 83
 Lin, Hsiou-Wei William 84
 linguistics 105; applied hard 98, 98;
 applied soft 98, 98; competence 142;
 defined 98; difficulties 63; disciplinary
 categories 98, 98; EMI in 105; English
 ability 105; fields 98; majors 106–107;
 pure hard 98, 98; pure soft 98, 98
 linguistics classes, English in 97–99; EMI
 in different disciplines 100–102;
 interviews with linguistics MA
 students 106–112; proportion of time
 for EMI in linguistic courses 103–104;
 questionnaire for linguistics professors
 102–106; in Taiwan 99
 LOA *see* learning-oriented
 assessment (LOA)
 logical reasoning 108
- machine-generated feedback 73
 Maiworm, F. 4, 17n2
 Mandarin Chinese 32, 92
 Master's-level EMI courses 91
 mathematical derivations 108
 mathematics 67; learning through
 English 68
 MBA programs 91
 meaning making 130
 mediation 149
 medical education in Taiwan 21;
 curriculum design 29–32; EMI
 courses, three levels of **31**; EMI in
 21–25, **30**; English for academic
 presentations 38; English for academic
 reading 37; English for academic
 writing 38–39; extracurricular support
 28–29; hospital-based training
 23; internationalization and EMI
 in HE 21–23; learning outcomes
 25–27; strategic plans 27–36; students
 32–34; support for EMI 37–39;
 teachers 34–36
 medical English courses 63
 medical writing 38–39
 medium of instruction (MoI) 8–9, 161
 metamorphosis 162, 173
 Ministry of Education, Culture, Sports,
 Science and Technology (MEXT),
 Japan 5
 mission drift 173
 moderation 149
 monolingual English classrooms 133
 monolingual mode 54
 morphology 98
 Morrison, B. 9, 52
 mother-tongue education 164
- Neumann, R. 98, 114n2, 180
 neurolinguistics 98, 108
 NNES contexts *see* non-native English
 speaking (NNES) contexts
 non-EMI courses 36
 non-native English speaking (NNES)
 contexts 1; linguistic backgrounds
 135; regions 124; students 135
- “one-size-fits-all” language policy 181
 online learning system 75
 online summary writing 66
 on-the-spot feedback 50
 outcome-based learning 170
- parallel language 115n5
 parallel language policy, Sweden 100
 peer assessment 132
 peer discussion in class 54
 performance goals 151
 phonetics 98
 phonology 98, 108
 pragmatic competence 142
 professional development programs 83
 professionalism 67
 professional vocabulary 37
 proficiency levels 115n7
 programming languages 108
 pronunciation accuracy 112
 psycholinguistics 98
 Putonghua 161, 164
 Putonghua Shuiping Ceshi (PSC) 167
- questionnaire for linguistics professors
 102–106, 118–120; circumstances
 where EMI can be used 104–106;
 proportion of time for EMI in
 linguistic courses 103–104
- ROAD-MAPPING framework 177, **178**,
 180, **181**
- scaffolding 132
 self-assessments 127, 132
 self-efficacy 151
 self-evaluation 129
 self-reflection task 73–74
 self-regulation 129

- semantics 98
 Singapore: EMI in 6–7; English and mother tongue policy 7
 social interaction 130
 social reality 100
 sociolinguistic competence 142
 sociolinguistics 98
 “soft pure” knowledge 115n2
 space-temporal system 144
 Special Administrative Region (SAR) 162, 174n1
 Steering Group on Undergraduate Common Curriculum 174n3
 stigmatization 164
 strategic competence 142, 149
 students: academic English ability 130; benefits, perceptions of EMI education 66–67; challenges, perceptions of EMI education 67–69; competence in medical specialties 26, 26; educational levels 127; English competence 33, 40, 114, 124, 127; English skills through EMI courses 110; intercultural competence 124; language difficulties faced by 141; language proficiency 97, 109, 142; performance 105; proficiency level 113; speaking skills, lack of 78
 students’ first language (L1) 43, 97
 students’ in-school training 27
 students’ second language (L2) 97
 subject-matter background knowledge 142
 subject-specific language 42
 subject teacher’s language proficiency 68
 summarizing ability 37
 summary writing skills 61, 74; as academic English skill 63–64; context 64–65; data collection and analysis 66; discipline-specific language learning needs 63, 71–72; discipline-specific summary writing platform 65; discipline-specific summary writing workshops 69–71; EMI 62–63; online learning, experience of 72–74; research methods 64–66; students’ perceptions of EMI education 66–69; students’ self-reflection 77
 supra-national declaration 4
 syntactic complexity 126
 syntax 98, 108
 systems thinking (ST) 143, 155
 Taiwan: *Challenge 2008: National Development Plan* 8; Chinese–English bilingual learning environment 8; College of Management 79–80; Department of Computer Science and Information Engineering (CSIE) 45; diverse student backgrounds 81; EMI courses 8, 14, 44, 79; EMI instructors 80; English ability, enhancing 99; English as a second official language (ESOL) 99; English promotion campaign 99; English Promotion Committee 99; in-service teachers 80; linguistic diversity in 32; linguistics classes, English in 97–112; literature in higher education context 130; management college 82; Master of Business Administration (MBA) programs 80; Ministry of Education in Taiwan 45; professors’ and the students’ opinions on EMI 121–123; questionnaire for linguistics professors 102–106; teamwork tasks 85; tertiary education 8, 45
 Taiwan, English in linguistics classes 97–99; EMI in different disciplines 100–102; interviews with linguistics MA students 106–112; proportion of time for EMI in linguistic courses 103–104; questionnaire for linguistics professors 102–106
 Taiwan-based standardized English test 106
 Taiwan Medical Accreditation Council guidelines 24
 Taiwan medical education 14, 21; curriculum design 28, 29–32; EMI in 21–25; English for academic presentations 38; English for academic reading 37; English for academic writing 38–39; extracurricular support 28, 28–29; General Scholastic Ability Test (GSAT) score 30; hospital-based training 23; internationalization and EMI in HE 21–23; learning outcomes 25–27; mandatory English courses and credit hours 30; positive environment 28; strategic plans 27–36; students 28, 32–34; support for EMI 37–39; teachers 28, 34–36
 teacher-centered approach 131
 teacher development activities 155

- teachers 34–36, 78, 85, 124; Content and Language Integrated Learning (CLIL) 42
 teacher's language proficiency 68
 teachers' oral proficiency 68
 teacher-student interaction 54
 teaching strategies 84
 team projects: Dos and don'ts for assigning projects **89**; implementation **89**
 team teaching 44, 47–49, 55, 58
 teamwork 85
 technical language 62
 technical writing 53, 53
 Technical Writing and Research Methods (TWRM) 47–48, 58; design 48, 53; language choices in 51–54, 53; research methods 50; sequencing of core course components 48; teamwork 48–49; technical writing 50–54
 tertiary education 2
 tertiary institutions 164
 textual competence 142
 thinking skills 143
 TOEFL iBT 81
 Top Global University Project, 2014 5
- translanguaging 3, 12, 44, 55, 134, 180; pedagogy 48–49
trawsieithu 3
 trilingualism 164
 Triple-Decker Model 149
 Tsou, W. 13, 126
 TWRM *see* Technical Writing and Research Methods (TWRM)
- university internationalization 21–23
 utility value of language studies 151
- vocabulary 47, 63, 111; academic 53, 63, 73, 124, 152; knowledge 143; learning 75; professional 37; technical 10
- Wächter, B. 4, 17n2
 ways of thinking and practicing (WTP) 129
 whole-English approach 112
 word comprehension 37
 writing needs of students 63
 writing skills 53
 Wu, J. R. W. 127, 131, 133–134
- zone of proximal development (ZPD) 170



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