Chapter 3
Faculty-Level Enhancement of English Medium Instruction at a Vietnamese University: Combining Non Curricular, Curricular and Extra-Curricular Approaches

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Abstract A key issue facing Vietnamese universities at this time is enhancing the quality of undergraduate EMI programs and related student learning outcomes. This chapter describes the EMI enhancement process developed by one university faculty which adopted a combination of non-curricular, curricular and extra-curricular approaches. These approaches evolved over time, building upon each other and upon participants' experiences. They comprise: (a) intensive first-year non-credit courses in academic English, (b) compulsory credit-bearing courses in subsequent years going 'beyond language' to develop EMI-related soft skills, and (c) extra-curricular EMI activities including engineering projects for community services. The development of this combination of enhancement activities was undertaken as a pilot project by the Faculty of Advanced Science and Technology (FAST), University of Danang—University of Science and Technology (UD-DUT). Using student outcome data and feedback from students and industry stakeholders, it is clear that such enhanced EMI equips students with a wide range of competencies and self-confidence for better presenting themselves in regional and global markets. Consequently the combination of these three approaches to EMI enhancement is highly recommended for those concerned about moving forward with EMI in terms of educational quality.

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3.1 Introduction

Although Vietnam's higher education system has developed significantly since 2000, in comparison to the country's socioeconomic development and international integration requirements there have been ongoing shortcomings in terms of curriculum, teaching and learning methods, teachers and management staff, learning materials, and internationalisation. As part of the effort to improve higher educational quality, the Ministry of Education and Training (MOET) resolved in 2005 (Resolution No. 14/2005/NQ-CP) to encourage Vietnamese universities to partner with overseas universities to offer Advanced Programs (APs) in different fields. This was followed up through the MOET project for 'Implementation of Advanced Programs for 2008–2015 period', which was approved by the Prime Minister under Decision No. 1505/QD-TTG dated 15/10/2008. Essentially, the Advanced Programs project was intended as a pilot for promoting an international approach in higher education, aiming to reform undergraduate programs and lift the quality of teaching and learning to an internationally recognised level via cross-border curriculum partnerships. By 2012, there were 23 universities nationwide implementing 35 undergraduate programs of 22 foreign universities over three phases of the Project, therein 18 programs in the fields of Engineering and Technology (Le, 2016).

English Medium Instruction (EMI) plays an important role in such internationalisation of education, not only as the means to deploy educational programs but also as the requirement for their quality standardisation, from curriculum to teaching methods, materials and assessment. As such, EMI has been recognised as one of the key factors in the successful implementation of Advanced Programs in Vietnam, and also as one of its biggest challenges (Walkinshaw et al. 2017). This relates not only to the limitations of student English proficiency for pursuing EMI courses and of faculty capable of teaching effectively in English, but also to issues for students studying fully through English yet living in largely non-English environments. These issues include: instructional pedagogy to support students in achieving learning outcomes through English; moving students from passive knowledge recipients to active learners and co-constructors of complex knowledge and skills; and developing learning environments to enhance soft skills, practical knowledge and exposure to real-life experiences in the discipline. Consequently, effective enhancement of EMI needs to address such issues, as well as the more obvious one of English language competence.

At the Faculty of Advanced Science and Technology (FAST), University of Danang—University of Science and Technology (UD-DUT), the first AP was launched in 2006. This was in Electronic and Communication Engineering. The second AP, launched in 2008, was in Embedded Systems. Both of them are fully taught in English with their curricula having been imported from partner universities—the University of Washington and Portland State University respectively.

Both programs have served as pilots for full EMI implementation in Vietnamese universities generally as well as UD-DUT in particular. As pilots, they demonstrated particular issues and invited efforts to address those issues and propose solutions to enhance EMI. While we do not claim to have found all the solutions, we do highly recommend the combination of the three approaches described in this chapter for moving forward with EMI educationally.

3.2   Options for Enhancing EMI

While various undergraduate EMI program models show some advantage in providing a much needed workforce having good discipline knowledge, fluent English ability and even relevant soft skills, they have mostly met many challenges in operating due to the English ability of students and instructors (Nguyen, 2018; Nguyen et al. 2017; Tri & Moskovsky, 2019; N. Vu & Burns, 2014). For example, because all courses in Advanced Programs (APs) in Vietnam are intended to be taught in English, this requires both students and academics to have a relatively good command of the language. However, English competence is still a big barrier for students, both as a required condition for entrance as well as a means of study, and there is a high drop-out rate from many EMI advanced programs (Hoang-Yen Dang, 2019). At the same time, the lack of adequate academic English competence among lecturers and lack of formal training in appropriate pedagogical techniques have hindered the progress of EMI programs, as recently noted by the Vietnamese lecturers in four universities (Le, 2016). However, universities have experienced great difficulty in finding academics who are experts both in their discipline and also in their English competence. Furthermore, the solution of sending faculty members abroad for short training courses or inviting foreign experts to come and teach for two or three weeks leads to unacceptably high costs (Tran et al., 2018).

Across all 35 undergraduate programs in the government's *Advanced Programs Project,* many options for enhancing EMI were tried out in order to help students improve their listening skills and knowledge acquisition. Most universities offered preparatory English courses for first-year students enrolled in APs; many universities invited native English-speaking lecturers to teach students English; and a number of universities allowed students to obtain international English certificates before studying specialised EMI programs (Quyen, 2017). Initially no university offered curricular credit-bearing courses, and only limited English-based extra-curricular activities. Thus, the main process of EMI enhancement was a preliminary English training program intended to prepare students with adequate English competence and confidence in heading to their professional training through EMI. However, interpretations varied in regard to how such a program should relate to the particular HE programs that students planned to pursue, how to cater for different student levels, and how to operate this training effectively. English language teachers were not ready to offer discipline-specific programs, and tended to offer General English

programs, whereas recent studies in the Engineering field (e.g. Aguilar, 2018; Arnó-Macià et al. 2020) demonstrate the importance of English for Specific Purposes. In addition, the best methods of teaching English in such courses have not yet been seriously reviewed across multiple institutions.

Options include three recent learning approaches that we consider have particular benefits for engaging in EMI: Neurolinguistic Programming, Personalised Learning and Inquiry-based Learning. Neurolinguistic programming encourages students to explore language learning strategies known to be successful and to try and apply those that suit them. Personalised learning involves a degree of student goal-setting and self-direction, with teachers supporting students to facilitate their learning plans. This is also the case in Inquiry-based learning where students investigate topics of their own choice, using a range of resources, and then present their work to others. These latter two methods offer the potential to relate the teaching of English to students' particular HE disciplines, building disciplinary English. All three methods also indirectly support the development of the soft skills necessary for using English as a lingua franca in multinational enterprises, whether with ASEAN partners or partners from more distant locations (Kirkpatrick, 2012). This includes a focus on intercultural communication competence (ICC), its challenges and its implications for crossing cultural borders in educational practices. As far back as 1998, Byram and Fleming affirmed that 'successful cross-cultural communication depends on the acquisition of abilities to understand different modes of thinking and living' (p. 11), which includes different pedagogical practices and assessment demands. Teaching ICC involves soft skills beyond language, as, despite having some common ground with communication competence in general, ICC also has many unique characteristics related to culture and variations between cultures (Liddicoat, 2009).

ICC is also relevant to EMI-supportive extra-curricular activities, for which project-based learning (PBL) is one of the most effective active teaching–learning methods. Founded on Vygotskian Social Learning and Constructivist ideologies (Elam & Nesbit, 2012, p. 114), students experience learning and practice through multi-collaborative tasks in multiple aspects in a project basically solving a real-life problem. As argued by Poonpon (2018, p. 2), and El-Henawy and Ali (2015, p. 414), PBL could be described as having the following characteristics: a content learning focus rather than a focus on specific language patterns; the student at the centre of learning; collaborative encouragement; an important role for language and communication skills in processing information; and presentation of learning results. Daniel Park (2015) has shown that such extra-curricular activities definitely help in improving learners' English competence since the opportunity they provide for one-to-one interaction with peers and instructors makes language development natural and meaningful. PBL activities usually provide a safe learning atmosphere with minimal stress for learners to practice their English communication skills. Also, working in teams helps build a sense of togetherness and reduces students' social anxiety.

Adopting teaching methods that are expected to serve the purposes of EMI enhancement is a first step in fulfilling a university's obligation to students when offering Advanced Programs. However, to the best of our knowledge, little attempt

has been made to discover and analyse the effects of the various EMI enhancement options. Therefore, this chapter is a step in that direction, contributing some on-the-ground data extending over several years.

3.3   Research Design

This chapter reports a longitudinal case study of the active practices of EMI enhancement put in place over time for the two Advanced Programs at the Faculty of Advanced Science and Technology (FAST), at the University of Danang—Danang University of Technology (UD-DUT). The case study draws on data obtained over a period of five years for the purpose of timely evaluation and providing direction for the ongoing improvement of the FAST's EMI enhancement offerings.

3.4   Context of the Study

Four-year curricula for two Advanced Programs were imported by DUT from two prestigious American universities: the University of Washington and Portland State University. These programs are taught almost entirely in English, by expert Vietnamese lecturers and by foreign visiting professors from the two partner universities and other prestigious universities around the world. In the effort to operate such world-class programs while taking account of the Vietnamese circumstances, DUT has been paying particular attention to EMI implementation supports. Considering English competence of instructors as an important requirement of EMI implementation, DUT hosted up to 2016 more than 65 visits of foreign professors and experts from around the world coming for consultancy and teaching, and 69 episodes of program managers, lecturers and staff going abroad for training in curriculum development, teaching and learning methodology. In addition, students have been supported administratively to attend some international events run by universities and other organisations in neighbouring countries and the United States. However, due to the limited budget from the Vietnamese government for program operation, mobility is not seen as an effective key EMI enhancement practice. Another more cost-effective practice is developing an English-friendly learning environment in the locale itself. At DUT this has involved combining non-curricular, curricular and extra-curricular approaches, and supporting these with a library of specialist books in English for both lecturers and students.

In this combined approach to EMI enhancement the non-curricular approach occurs first. It involves intensive first-year non-credit courses in academic English, as well as the disciplinary English related to the field of Engineering. In the second and third years, credit-bearing courses are included in the compulsory curriculum, going 'beyond language' to develop EMI-related soft skills and writing skills. Then in the final year, there is a capstone project course involving English medium study and

Table 3.1 EMI enhancement model in Advanced Programs at DUT

	Non-curricular	**Curricular**	**Extra-curricular**
First year	*Intensive Academic English to IELTS 5.5*	–	*Oral communication focus*
Second and third years	–	*Academic and Technical Writing (9 credits)* *'Beyond-language' Soft Skills (7 credits)*	*Project-based learning (disciplinary English)* – Learning Express – Undergraduate Research Initiative program – Engineering Projects in Community Services program – Maker to Entrepreneur program – English clubs
Fourth year	–		
Fifth year	–	*Capstone Project (professional English)*	

communication. All these curricular courses are a requirement for graduation. The third, extra-curricular, approach is voluntary, since students self-select to engage in project-based EMI activities. This can occur at any stage across the five years of the program and includes engineering projects for community services. These practices were not originally integrated into our Advanced Programs but were generated in response to the challenges encountered, then gradually put to the test and evaluated through output results and feedback. Table 3.1 gives a visual overview of the three approaches currently in place, and the year levels in which they occur.

Staff contributing to these three approaches to EMI enhancement were from various sources. In the implementation of intensive English courses, from 2015, the FAST chose ACADEMY English Centre (AEC) as a partner to design the specific English curriculum and deliver the courses to Advanced Program students, because AEC itself is a top prestige and quality English centre in Danang city. Since 2015 the first-year intensive English courses and associated extra-curricular activities have thus been delivered by the expert Vietnamese and foreign English lecturers of the AEC. The implementation of the curricular skills courses (applied from 2016) and DUT extra-curricular activities (applied from 2019) have been taught in English by the FAST's own lecturers or by invited lecturers from elsewhere in DUT and internationally.

3.5   Research Method

Data for the case study were generated by the FAST between 2015 and the start of the COVID-19 pandemic in Vietnam early in 2020, using the following methods:

- observations, including teacher–researcher participant observations;

- student feedback;
- documentation of non-curricular, curricular, and extra-curricular activities, including progressive improvement and scale-up in response to feedback;
- assessment figures; and
- feedback from industry stakeholders.

Surveys of AP students for feedback on intensive English courses were conducted from 2015, while surveys of AP students and industry employers regarding curricular skill courses were conducted from 2016, and from 2019 for extra-curricular activities involving DUT students generally. The number of students participating in surveys reflects the entrance selection for APs across the years, as well as the relatively recent implementation of extra-curricular activities.

Data were analysed progressively by the present authors and their colleagues with the aim of evaluating the effectiveness of each approach to EMI enhancement and informing the design of ongoing improvements. Thus the analysis was consistent in terms of the particular intentions of each approach, as identified in the following sections.

3.6   EMI Enhancement Practices

In the following sections the FAST's practice and experiences to enhance EMI at DUT are first described and then expanded on with student outcomes and evaluation data. These EMI enhancement practices are threefold: first-year non-curricular intensive English training, compulsory curricular courses in subsequent years and extra-curricular project-based activities.

3.7   First-Year Intensive English Program (Non-Curricular)

To evaluate their freshmen's English proficiency, universities and colleges apply various assessment tools, notably CEFR, TOEIC, TOEFL and IELTS. With thoughtful consideration, DUT has chosen IELTS Academic as the most suitable and efficient program to assess students' abilities in English in terms of undertaking university studies and appropriately utilising the four skills of Listening, Speaking, Reading and Writing. IELTS is recognised as one of the most reliable academic English tests, and is also a real challenge for learners coming from general English classrooms. AP freshmen in the FAST must achieve at least IELTS Academic band 5.5 (or equivalent) across Listening, Speaking, Reading and Writing, before starting on the AP itself. To date, all students have been required to take the intensive English course provided by the AEC in order to improve their English as much as possible.

The intensive English course spans a five-month period and is specifically designed to develop students' academic English, including the use of the kinds of

higher order thinking (HOT) that are essential for undergraduate studies. The IELTS Academic Writing Skills tests, for example, require learners to analyse, evaluate charts and data or give their own views and make predictions. Speaking tests also require the ability to express different perspectives, compare and contrast, synthesise ideas and justify attitudes. The AEC courses focus on the IELTS Academic 4C's of twenty-first-century skills—Communication, Collaboration, Critical Thinking and Creativity. They also tailor the choice of topics and activities to reflect the science and technology interests of FAST students. Importantly, the courses are not only designed with IELTS in mind, but also address the need for students to be able to study their discipline through English and do their university assignments, some of which, in the FAST, involve creating models and giving instruction to others on their underlying principles and use. Thus students' learning is directly designed to serve their needs as FAST undergraduates—developing competence not only in English but also in some of the 'beyond-language' soft skills necessary to begin studying through EMI.

To this end, the course uses several forms of teaching to help the student develop comprehensively. Key among these are 'Method NLP' (Neurolinguistic programming), 'Personalised Learning' and 'Inquiry-based Learning', briefly outlined earlier in this chapter as useful options for enhancing EMI. Combined with regular extra-curricular activities and IELTS workshops such as 'IELTS DRAGON' or 'What does IELTS mean to you?' as well as some other programs specially designed for FAST students, these methods have proved highly efficient in stimulating students to learn and practice English as well as to achieve the University requirement in the concluding IELTS assessments.

Most AEC teachers were originally lecturers from universities and colleges and have highly specialised knowledge and skills. They are all familiar with the ways of teaching and testing in the university credit system, and are constantly updating their teaching and student care practices with the use of technology, such as visual aids in teaching, online teaching and progress tests, online follow-up support, and so on.

One of the fundamental factors that has contributed to program efficiency is the Student Care service from AEC. Besides the specially designed syllabus, teachers from the Testing and QA Department of AEC provide intensive testing and consistently follow the progress of each student and give them immediate English language support when needed, via various ways of communication and interaction such as the Class Group Facebook, email or phone. This is highly valued in student feedback. Student evaluations of the AEC program overall are also consistently positive, with frequent comments on the enthusiastic teachers, well-designed syllabus and materials and academic support.

3.7.1 Learner Outcomes from the AEC Intensive English Courses

Since the start of DUT-AEC cooperation in 2015, four successive English courses have been organised with the aim of giving students the best opportunity to achieve the goal set by the University for first-year students. Input and output test results for the years 2015–2019 are shown in the following two graphs (Fig. 3.1).
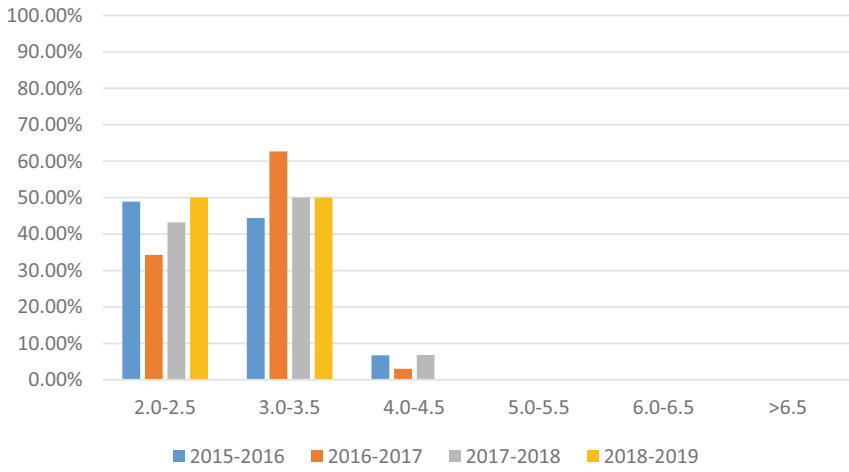
(a) IELTS Input test results.
(b) IELTS Output test results.

As regards the input tests, it is noticeable that a majority of students across all courses were ranked at rather low IELTS levels—from 2.0 to 3.5—with under 10% of students ranked at band 4.0–4.5 and none at higher bands. However, when it comes to the output tests, students' results changed very positively over the five-month period. On average across the four cohorts, over 50% of students reached IELTS levels from 5.0 to 5.5 or above, up to 6.5 and over, with just a small number of students course still ranked at level 2.0–3.5 and thus unable to continue into the EMI program.

In the years 2017–2018 and 2018–2019, FAST students wishing to enroll in an AP were required by the university Department of Academic Affairs to additionally take the internal IELTS format test designed and co-organised by the AEC and DUT. This gave students an additional month to improve their English, and, unlike the IELTS test, included the kind of technical English taught during the intensive program in preparation for the chosen AP. The results from this test were used as the official means of deciding whether or not a student had passed the first-year requirement for entry into the AP. If not, then students were required to move to a standard program using Vietnamese as the medium of instruction (Fig. 3.2).

The results in Fig. 3.2 indicate that students benefitted from reliance on this test rather than the earlier IELTS, since considerably higher results were achieved, with a 20% increase for the 2017–2018 cohort and a 10% increase for the 2018–2019 cohort. This increase could be attributed to various factors: the extra month of study; building on the AEC coursework; or possibly, in the case of the 2017–2018 cohort, the fact that the AEC staff had not previously been required to design such a test and built on that experience when designing the 2018–2019 test.

In any event, based on both the IELTS and the internal tests, it can clearly be concluded that the intensive English program for AP students had a positive impact on all students' English competence, enabling the majority of them to reach the required output target in quite a short period of time. Nevertheless, FAST staff in the AP programs soon became aware that students achieving IELTS 5.0–5.5 continue to need targeted support to study successfully through EMI.

(a): IELTS Input test results
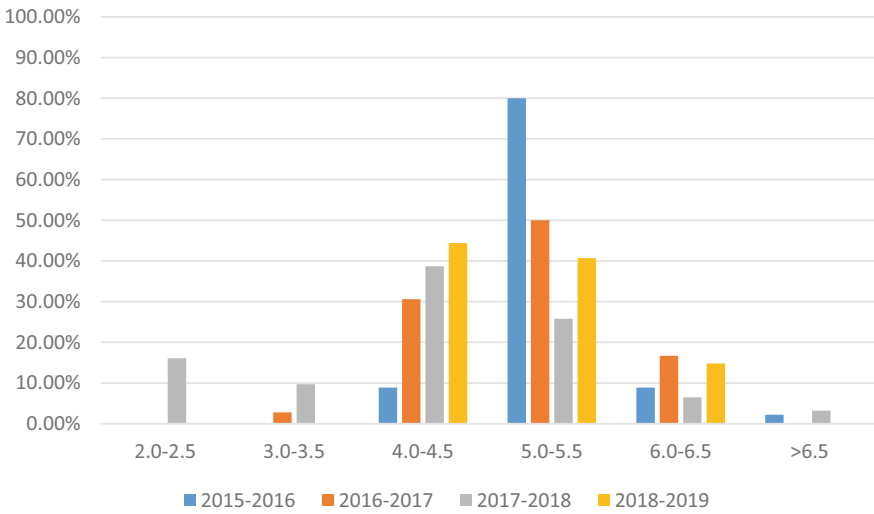
(b) IELTS Output test results
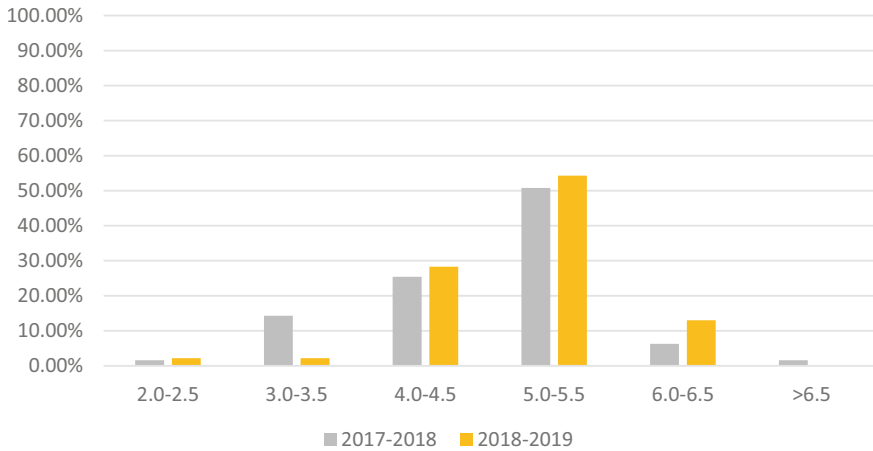
Fig. 3.1 IELTS (academic) input and output test results

Fig. 3.2 Internal IELTS results

3.8 Curricular Courses Enhancing EMI

3.8.1 Second and Third Year Curricular Skills Courses

To further boost learners' development of academic and disciplinary English language competence, compulsory curricular courses totalling 16 credits were specifically designed to respond to the demands of the EMI curriculum for AP students in years 2 and 3. These courses focus on two themes: (a) academic and technical writing, and (b) 'beyond-language' soft skills, such as managing discussion in small groups, as shown in Fig. 3.3.

The academic and technical writing courses—English Composition, Introduction to Technical Writing and Advanced Technical Writing—equip students with academic writing skills to use English for writing technical reports such as lab reports, case studies, internship reports, essays and graduation papers. On the other hand, the 'beyond-language' soft skills courses concentrate on communication and intercultural communication competence (C&ICC) to enable students to have an in-depth understanding of communication processes and strategies, English-speaking cultures and their leadership styles, and the relationship between English language and its cultures. In the small group communication and discussion leadership courses, students become fully aware of five factors that have effects on communication: personality, cultural, gender, generation and religion. Recognising these factors and related differences across cultures helps learners develop effective communication strategies and make adaptations when working in groups in multinational corporations. Together these 16 compulsory credit courses offer optimal conditions for developing students' capacity to accomplish the overall goal, that is, to boost students' content acquisition and potential for its professional application.
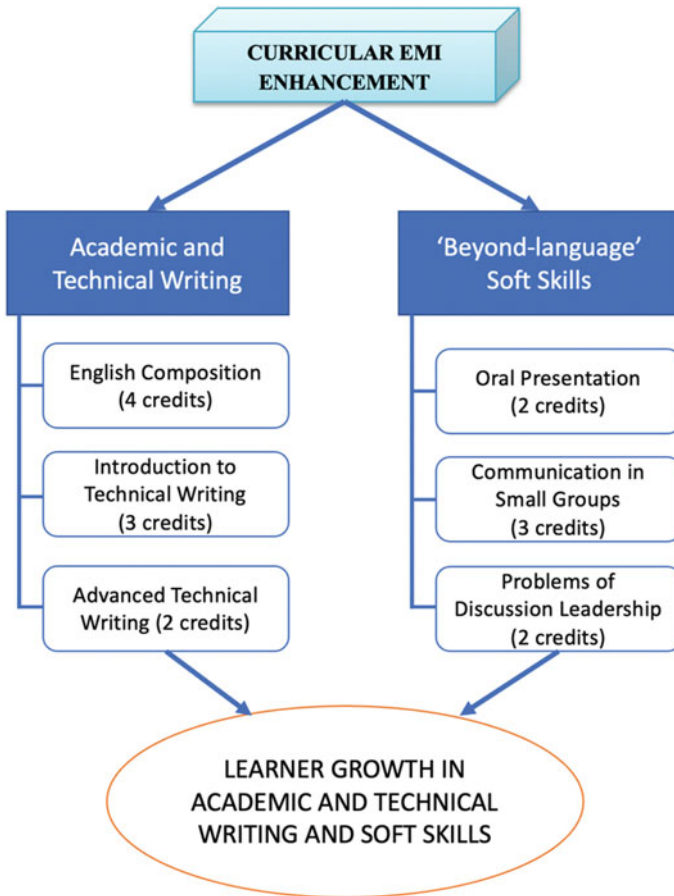
Fig. 3.3 Credit courses and goals for EMI enhancement

3.8.2 Fifth Year Curricular Capstone Project

Capstone projects are generally designed to encourage students to think critically, solve challenging problems and develop skills such as oral communication, public speaking, research skills, media literacy, teamwork, planning, self-sufficiency or goal-setting.

The final year capstone project in the two DUT Advanced Programs is the last credit course (6 credits) of the program and requires students to engage with real-life situations and engineering problems in industry and apply the knowledge and skills, including English communication and intercultural communication skills, that they have accumulated over the previous four years. This course lasts for a semester, involving two initial months for an internship and three more months for preparing their final thesis on a topic raised by the internship host and co-guided by industrial

experts and academic instructors. Students need to submit written reports in English for all stages of solution development following the design process and orally present their work, also in English, for evaluation by a guidance committee. This capstone project forces students to develop and apply English skills in a real multi-cultural working environment involving industrial engineering problem-solving through team work. In this way, their English can improve naturally and rapidly. Students can also take advantage of this course for their employment portfolio, while enterprises have found it a good preparation for recruiting their qualified workforce.

3.8.3 Learner Outcomes Related to Emi Enhancement Curriculum

While academic English language development is the main focus in the first-year intensive program, in subsequent years the curricular focus is on the application of English and English medium soft skills within the discipline and within professional intercultural situations. In regard to learning outcomes of the capstone project, survey data on satisfaction of students and industry enterprises, carried out by DUT in 2015, showed that most students and enterprises agreed on approximately 3.0 out of a 4.0 point scale regarding the achievement of students after their capstone project in terms of soft skills, including communication skills and teamwork. Student feedback on the development of both communication skills and soft skills across their whole Advanced Program was obtained in the academic year 2018–2019 from 280 graduating students in two APs, using a paper questionnaire with a five-point Likert scale (Brace, 2008) (Table. 3.2).

These consistently high student ratings were supported by feedback from employer representatives on our AP graduates, such as being good at English, soft

Table 3.2 Student feedback on their development of communication and soft skills across the program

	Development of communication and soft skills within the Advanced Programs						
	Inter-personal	Verbal	Non-verbal	Problem-solving	Critical thinking	Oral presentation	Team work
1. Very dissatisfied	3%	3%	3%	1%	1%	3%	2%
2. Dissatisfied	8%	3%	2%	1%	2%	6%	4%
3. Neutral	18%	15%	16%	14%	13%	16%	15%
4. Satisfied	54%	58%	65%	55%	57%	58%	60%
5. Very satisfied	17%	22%	14%	29%	27%	16%	19%

skills and working attitude (Viettel Company), good at English and communication skill with foreign (eSilicon, Danang), having effective and clear communication skill (Bosch, Ho Chi Minh).

3.9   DUT Extra-Curricular Activities

Moving into active educational methods, DUT has recently applied a variety of project-based learning activities for students, such as Learning Express LeX (in collaboration with Singapore Polytechnic), Engineering Projects in Community Services (EPICS), Women Engineering Project in Community Services (WEPICS), and eProject with Industry (in collaboration with Arizona State University, USA). These programs/activities have been designed and organised to leverage an active and student-centric learning method covering multiple disciplines and multiple skills. Therefore, the student plays the main role in all stages of the activities, from identifying, engaging with and analysing real-world problems, to proposing their solution, managing their team to implement the project and finally reflecting on their own participation as part of the evaluation and presentation phase. In this case, the teacher adopts a role as facilitator. All of these activities have been deliberately designed as a meaningful way for students to keep improving and consolidating their English language and related beyond-language competences and to increase their confidence in communicating interculturally in English.

In recent years extra-curricular activities for all DUT students have begun to be systematically developed from years 1 to 4 for the purpose of enhancing multidisciplinary collaboration, through which students learn from others in different disciplines. Some degree of English is always required, and participating AP students therefore gain the opportunity to expand their English to encompass topics outside their specialisation. Generally in the first stage of these activities, team members have to together develop specific innovative engineering idea(s) to help solve an existing problem in their community. Following the design thinking process, and gathering training knowledge from international and national institutional and industrial experts, as well as considering feedback from all stakeholders, they have to work in a team to design and build their prototype products to meet the requirements. Students then receive certificates of participation in these activities.

3.9.1   *Learner Outcomes from Dut Extra-Curricular Activities*

Table. 3.3 shows the data collected from 30 students (AP students and others) who participated in these activities at DUT in 2019 as regards their motivation and improvement of communication skills.

Table 3.3 Surveys on student satisfaction of extra-curricular activities

Questions	Answers (%)	
	Yes	No
1. Improvement in personal motivation and expectation for self-contribution to social innovation and development	100	0
2. Motivation to propose innovation ideas to solve community problems	100	0
3. Improvement in self-confidence in communication between team members, with experts, and with community people	100	0
4. Improvement in English competence	92.9	7.1
5. Improvement in self-confidence to communicate in English through project activities	89.3	10.7
6. Improvement in international approach (thinking, opportunity, activities, etc.)	100	0
7. Better understanding about self-responsibility for society	100	0

The high results for improvement in communication in English, overall English competence and intercultural communication competence bear witness to the value of these activities in enhancing EMI, while the 100% rating for improvement of personal motivation, responsibility, innovation and international reach reveal the effectiveness of this type of learning in general, using English as an important means to leverage students' personal and interpersonal skills. The data reveal that, through these extra-curricular activities, there has been a natural improvement in students' activeness and communication skill in general and their English competence in particular. Unfortunately data could not be collected for the 2020 year due to COVID-19 restrictions, but the 2019 data certainly supports the continuation and expansion of these extra-curricular activities.

3.10 Conclusion and Implications for Moving Forward with EMI

In the attempt to enhance EMI in response to both its advantages and challenges in Advanced Programs, DUT and the Faculty of Advanced Science and Technology (FAST) have implemented a variety of processes including improving human resource quality, facilities, learning and teaching methods, coursework and extra-curricular activities. In this chapter, we have indicated our EMI challenges and have shared our practices of applying non-curricular, curricular and extra-curricular approaches to effectively enhance EMI quality. These practices are threefold: (a) initial training—an intensive non-credit five-month English program—to prepare students with adequate language skills before heading to the EMI program, (b) the implementation of compulsory curricular courses (16 credits in total) offered

during years two and three to foster English language competence and 'beyond-language' soft skills, plus a one-semester 6-credit capstone project in the fifth year (final semester) and (c) extra-curricular project-based activities in concurrence with the EMI program to build and consolidate practical and professional communication skills in English.

The training in English before starting EMI courses is clearly necessary, given that very few students have any prior experience of using English for content learning. The course offered by the AEC not only provides a focus on academic English, but incorporates topics and activities that are specifically relevant to the scientific and technological interests of the enrolled students. This is in contrast to some other university preliminary courses which offer only General English (see, for example, student comments in Chapter 12 of this volume). The AEC course thus gives students a solid basis for absorbing and strengthening specialised knowledge in English language in the coming semesters as well as strong self-confidence in communication which boosts their English skills day by day. In other words the course has a domino effect.

This domino effect is further extended through the 16 compulsory credit-bearing courses taken across the second and third years of the Advanced Programs, which validate intercultural communication skills as an integral part of the undergraduate program. An important feature of these courses is that they not only have an English language and intercultural focus but also provide 'beyond-language' soft skills training. The courses are directly linked to the particular needs of FAST students in each year, thus adding more meaning to the study. These courses support successful content learning by deepening students' English language and communication competence in intercultural, teamwork, technical writing and discussion management.

Extra-curricular activities involving practical project-based activities similarly enhance the EMI aspect of the programs. In these extra-curricular activities English language development happens in an active, learner-friendly and exciting way in situations where students apply the knowledge acquired through their major to solve specific real-life problems. The problems are chosen to require the application of inter-disciplinary and multiple interpersonal and personal skills, including all four skills of English communication. In turn, the projects allow students to work together with their peers, their instructors and other stakeholders, and also to find motivation to communicate in English, to share their interests and to overcome their fear of making mistakes. In this way, students move from being passive knowledge recipients to active learners and co-constructors of new, complex knowledge and skills. Through such experiential learning activities, students' communication skills are developed naturally to meet their own personally motivated needs without undue pressure. This creates a mutual strengthening impact among the learners, building social and emotional well-being and self-confidence while also strengthening their professional experience and resulting in strong academic and social performances.

Our own evaluation data on these three approaches to enhancing the quality of EMI indicates definite strengths and reasons to continue them. The course assessment of preliminary intensive English training shows the clear improvement of students' English capacity—from 95% of students below band 3.5 IELTS Academic at the

input test to approximately 65% above band 5.0 at the output test after the five-month training. In regard to the curricular EMI enhancement practices, an average of 80% of students participating in the 2018–2019 survey indicated satisfaction in regard to their development of interpersonal, verbal, non-verbal, problem solving, critical thinking, oral presentation and teamwork skills. In addition, feedback from employers indicates particular appreciation of the quality of student communication skills. Finally, nearly all students participating in project-based extra-curricular activities in their fifth year in 2019 agreed on their improvement in communication skills, including English, self-confidence and motivation, as a result of these projects. Although the data is still limited, it does reveal the effectiveness and usefulness of these activities for the 30 students involved.

Given the evaluation data on all three of our approaches to enhancing EMI, our university has been expanding these learning models to a larger scale and plans to collect ongoing systematic feedback from stakeholders. We highly recommend these practices to other EMI programs who also confront the challenges of improving student English proficiency and learning methods to enhance the quality of their EMI offerings. While the execution of such a model of non-curricular, curricular and extra-curricular activities occurs at the program level, great support is needed at faculty and university level. In order to purvey these effective practices to other programs, a system of strategic plans and policies needs to be set up by the institution to provide resources and guidance to support the process of moving forward educationally with EMI.

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