

Kevin W. H. Tai* and Yiran Vicky Zhao

Success factors for English as a second language university students' attainment in academic English language proficiency: exploring the roles of secondary school medium-of-instruction, motivation and language learning strategies

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Abstract: Displaying a strong competence in English as a second language (L2) is a major advantage for university graduates in personal development and career advancement. There are limited studies that have explored how the implementation of English-Medium-Instruction (EMI) in non-Anglophone universities can affect students' academic English proficiency. This mixed-method study explores how both the learners' variables (motivation and L2 learning strategies) and the medium-of-instruction policy implemented at secondary and university settings can contribute to students' success in academic English learning at a bilingual university in Hong Kong. The findings of a large-scale questionnaire reveal that the effect of medium-of-instruction in students' secondary school education is not a significant predictor of students' academic English language proficiency at university. The findings suggest that university students who previously attended secondary schools which adopt medium-of-instruction other than English tend not to be disadvantaged in improving their academic English proficiency. Institutional factor (i.e. provision of EMI lectures at university) and learners' variables, including students' L2 strategy use and motivation, are statistically significant predictors of the student's English language proficiency. The implications for higher education policy in Hong Kong and worldwide will be discussed.

***Corresponding author: Kevin W. H. Tai**, Academic Unit of Teacher Education and Learning Leadership, Faculty of Education, The University of Hong Kong, Hong Kong,
E-mail: kevin.tai@hku.hk. <https://orcid.org/0000-0002-2098-8082>

Yiran Vicky Zhao, Faculty of Education, University of Cambridge, Cambridge, UK,
E-mail: yz462@cam.ac.uk. <https://orcid.org/0000-0002-0841-967X>

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1 Introduction

As higher education has internationalised, the use of English as the medium-of-instruction has grown exponentially in the last ten years (Macaro et al. 2018). English-Medium-Instruction (EMI) is defined as the ‘use of English to teach academic subjects other than English itself in countries or jurisdictions where the first language of the majority of the population is not English’ (Macaro 2018: 19). With the spread of English as the international language of research, science, and academia (Ammon 2006; Coleman 2006; Tollefson and Tsui 2014), higher education institutions across the non-Anglophone have increasingly offered academic programmes that are taught through English. Consequently, EMI has become prevalent at universities to prepare local students for career advancement and enhance the universities’ global visibility (Beckett and Li 2012; Wächter and Maiworm 2014; Zhou et al. 2022).

It is assumed that implementing EMI programmes at universities can contribute to students’ academic English language proficiencies (Aizawa et al. 2020; Rose et al. 2019), although EMI does not have an explicit language learning goal. However, more recent studies (e.g. Hu et al. 2014; Macaro et al. 2018), have illustrated the evidence that university students’ academic English proficiency will develop as they study academic subjects through EMI education is not positive. To date, there are limited studies that have provided statistical evidence of how the implementation of EMI in non-Anglophone universities can affect students’ academic English proficiency (Curle et al. 2020; Soruc et al. 2021).

Additionally, success in English language learning is not only reliant on the university’s EMI provision. Other individual variables may directly or indirectly affect students’ English language proficiency (Soruc et al. 2021). There is a dearth of research that explores how institutional factors, including the university’s medium-of-instruction policy, and learners’ factors, such as students’ previous educational attainments, the medium-of-instruction at students’ secondary schools prior to admission, students’ motivation and second language (L2) strategy use, affect the students’ academic English language development in the context of English-medium university. Particularly, no research has ever been carried out to investigate such an issue at a bilingual university which enables academic departments to decide the medium-of-instruction (EMI or mother tongue medium-of-instruction in this case) for their courses. Studying such a unique context can potentially enable researchers to gain a better understanding of what makes some

students succeed in achieving a high level of academic English proficiency at universities which adopt a bilingual policy. This can lead to better development of the measures and language support that bilingual universities can provide to their students.

This study is one of the very few studies that conducts a large-scale questionnaire ($n = 349$) on university students' English language experience at a non-Anglophone university which adopts a bilingual policy. The aim is to investigate how the individual variables (motivation and L2 learning strategies) and the university's medium-of-instruction policy can predict students' success in English L2 learning at a bilingual university in Hong Kong (HK). Qualitative interviews with individual students are also conducted in order to understand the students' perceptions of the potential predictors of success in English language learning.

2 Background to the study

2.1 The impact of medium-of-instruction in secondary education on university students' academic English proficiency

Recent research has expressed the concerns that students from secondary schools which adopt mother tongue medium-of-instruction have lower academic English language proficiency than those from EMI schools (e.g. Evans and Morrison 2018; Lin and Morrison 2010). This has important implications for university EMI education since research studies have found that students' secondary school background is one of the substantial sources of difficulty for students in learning content subjects and developing academic English proficiency in EMI university settings (Aizawa and Rose 2020). Lin and Morrison (2010) examine the impact of medium-of-instruction in secondary school education on university students' size of academic vocabulary. Seven hundred and sixty two undergraduates at the HK Polytechnic University take a vocabulary levels test for measuring their receptive vocabulary size. Four hundred and thirteen of them write an argumentative essay after the tests for evaluating their productive vocabulary knowledge. The findings indicate that first-year undergraduates from EMI secondary schools in HK have significantly larger receptive and productive vocabularies than those from Chinese-Medium-Instruction (CMI) schools. It is suggested that EMI secondary schools offer students more exposure to English academic vocabulary which

allows them to employ more academic words in the written work and produce quality academic texts for their tertiary assessments.

Evans and Morrison (2018) conduct a follow-up study and they compare the university experiences of first-year undergraduates who graduated from HK's CMI and EMI secondary schools when adjusting to the academic and linguistic demands of EMI education at the university level. The authors carry out a large-scale questionnaire ($n = 828$) and the findings reveal that undergraduates from CMI schools enrol into university with lower academic English proficiency in comparison to the undergraduates who graduated from EMI schools. During the semi-structured interviews, some of the EMI graduates mention that they adjust to the language demand of university study fairly easy as they have been studying academic subjects in English since year 7. The authors argue that the secondary school medium-of-instruction plays an important role in determining the students' speed and ease of adjustment to EMI university study. Nevertheless, the findings of the study rely on students' self-assessment of academic skills, which include academic reading, writing, speaking and listening. To date, there are limited research studies (Aizawa and Rose 2020; Evans and Morrison 2018; Lin and Morrison 2010) which investigate the influence of school background on students' English language ability at university. Hence, one of the aims of the current study is to explore whether the impact of secondary school medium-of-instruction is a crucial factor in predicting the undergraduates' academic English language performance at the university level.

2.2 The impact of university's EMI policy on English language learning

Most of the studies in the field of EMI conceptualise success in EMI through investigating students' mastery of academic knowledge. Researchers (e.g. Airey 2012; Li 2018; Rose et al. 2019; Thompson et al. 2022) typically use students' academic results in the EMI courses in order to evaluate the learner's success in EMI. A small number of studies have investigated the effects of EMI instruction in university settings on students' English L2 proficiency (e.g. Hu et al. 2014; Rogier 2012; Yang 2015). Yang (2015) examines 29 Taiwanese learners' English proficiency in an EMI tourism classroom at a Taiwanese university longitudinally over two years. These learners' English proficiency levels are measured by conducting pre-tests immediately after entering the programme and post-tests after two years. The tests were developed based on the national General English Proficiency Test, a locally-developed English proficiency test in Taiwan. The results show that after two years of studying the EMI programme, the learners make significant improvements in

their reading and listening skills in the post-tests. Nevertheless, since Yang only evaluates learners' productive skills during the post-tests but not the pre-tests, Yang is not able to evaluate the effectiveness of the EMI programme in improving learners' productive skills. Moreover, as Yang's study does not have a control group that received non-EMI education, this study is not able to establish a relationship between EMI education and the development of learners' English proficiency.

On the other hand, Lei and Hu (2014) investigate whether the EMI programme at a Chinese university has an effect on Chinese undergraduate students' English proficiency. The authors conduct a direct comparison group in China and the authors use two national tests: the National Matriculation English Test and the College English Test. The authors have found similar English proficiency gains on two proficiency tests amongst EMI students and those studying in a CMI programme while taking general English language classes. Additionally, the student's perceptions of EMI programmes and prior English proficiency have significant effects on the outcome measures. The authors argue that there is a lack of evidence which suggests that EMI can lead to better English language learning. Nevertheless, the authors also point out that it is possible the university's EMI programme has suffered from several issues, including a mismatch between the programme goals and actual pedagogical practice and inadequate command of English as the language of instruction for teaching and learning. Moreover, the outcome measure is evaluated by general English proficiency tests which do not evaluate subject-specific English skills that students have acquired in the EMI programme.

A study which measures EMI students' academic English proficiency by using a standardised English test (International English Language Testing Service, IELTS) is conducted by Rogier (2012). Rogier aims to investigate the extent to which undergraduates' academic English proficiency will improve after studying for a four-year undergraduate degree through EMI. The findings demonstrate that there is a statistically significant score gain in all English language skills areas (i.e. reading, writing, listening and speaking). Particularly, students' largest gains are in the area of speaking, followed by reading. Rogier's study does not have a direct comparison group, but she compares the results with studies of general English programmes (e.g. Elder and O'Loughlin 2003). Rogier justifies that EMI students can move up to one-half of an IELTS band in four years. However, such a finding shows that EMI instruction may not enable students to achieve a huge improvement in their academic English proficiency.

Based on the small body of studies that have assessed measured academic English language gains in EMI university settings, it is shown that the evidence is not positive (Macaro et al. 2018). This means that there are potentially other variables that may influence students' English language proficiency. This study aims

to address the research gap by investigating whether a university's medium-of-instruction policy (Chinese Medium Instruction and English Medium Instruction policies) can predict students' success in English L2 learning at a Hong Kong bilingual university. In the following sections, we will explore how students' motivation and their use of language learning strategies can predict successful English learning.

2.3 Language learning motivation

Success in English language learning can be influenced by student motivation. Motivation research has a strong history in the field of applied linguistics, and it has been conceptualised within different frameworks over the past decades (e.g. Deci and Ryan 2002; Dörnyei and Ryan 2015) with Deci and Ryan's self-determination theory being one of the prevailing frameworks. Self-determination theory hypothesises that individuals have an ability to self-regulate their behaviour and engage in intellectual growth with others. The theory conceptualises motivation as intrinsic and extrinsic (Deci and Ryan 2002; Ryan and Deci 2000, 2002). Extrinsic motivation represents the practical benefits of L2 proficiency. The perceived usefulness of L2 proficiency provides the driving force (Csizér and Dörnyei 2005), such as job prospects, good salaries, immigration and travelling. On the other hand, intrinsic motivation triggers 'internally rewarding consequences', including the 'feeling of competence and self-determination' (Deci 1975: 23). When individuals are intrinsically motivated, they may engage in activities because of the challenge, enjoyment, interest, personal enrichment and self-determination needs, rather than money, recognition and competition (Amabile et al. 1994). As Deci and Ryan (2002) argue, the three psychological needs (i.e. the need for autonomy, competence and relatedness) are necessary for a person's motivation and well-being. Research studies in L2 acquisition and EMI have employed self-determining theory to understand the development of and decline in student's motivation in L2 English learning as well as learning content subjects through English as an L2 (e.g. Hiromori 2003; Kojima 2021; Kojima and Yashima 2017). This implies that Deci and Ryan's theory can be a useful framework for exploring students' language learning motivation.

In order to maintain learners' language learning motivation, 'motivation must emanate from the learners rather than be externally regulated by teachers', and 'learners must see themselves as agents of the processes that shape their motivation' (Ushioda 2008: 30). In a questionnaire survey of 524 first-year students at the HK Polytechnic University, Lin and Detaramani (1998) find that intrinsic motivation is positively related to higher English attainment. However, the result shows that

extrinsic motivation is not positively related to high English attainment. In Gan's (2003) case study, all successful EFL university students report having a fondness for English since secondary school. Unlike less successful students, none of them feels that they are forced to learn English. In the light of this finding, it is suggested that intrinsic motivation is a powerful factor contributing to a higher level of English proficiency. It is suggested that students with higher extrinsic motivation tend to attach higher priority to working experience rather than English attainment.

Recent studies have demonstrated that students enrol in EMI courses at the university level for various reasons. One of the most common goals is to enhance their English proficiency levels (e.g. Jiang et al. 2019; Kojima and Yashima 2017) and simultaneously learn the relevant academic subject knowledge (Rose et al. 2019). Other motivators include enhancing future job opportunities (e.g. Iwaniec and Wang 2021; Macaro and Akincioglu 2018), opportunities for contact with the international community (e.g. Macaro and Akincioglu 2018) and the prestige related to learning English as a global language (e.g. Uçar and Soruç 2018). These findings have revealed that students' motivations are diverse and there is a need for research studies to consider different factors that shape the influence of EMI on students' language learning motivation.

2.4 Language learning strategies

L2 Learning strategies are techniques that students apply to enhance the effectiveness of their learning (Dörnyei 2001; Zhou and Rose 2021). Students make use of resources and materials to take responsibility for their own language learning. Following a series of empirical studies on strategy use by L2 students, O'Malley and Chamot (1990) classify strategies into three groups: cognitive, metacognitive and social-affective. They state that cognitive strategies "operate directly on incoming information, manipulating it in ways that enhance learning" (O'Malley and Chamot 1990: 44). They are therefore related closely to the processing of language, for example, inferencing, deductive reasoning and translation strategies. Metacognitive strategies, on the other hand, "involve thinking about the learning process, planning for learning, monitoring of comprehension or production while it is taking place, and self-evaluation after the learning activity has been completed" (O'Malley and Chamot 1990: 8). Students can be aware of the content to be learned, and awareness of one's motives, what the task requires and whether they can meet those requirements (Biggs 1984). The final category described by O'Malley and Chamot (1990), is that of social-affective strategies which are defined as "either interaction with another person or ideational control over affect" (p. 45). The affective strategies are linked with motivation and attitudes, whereas the social strategies could take the form of questioning for

clarification, cooperation with others, or creating opportunities for practice by seeking out native speakers.

A contemporary taxonomy of language learning strategies is developed by Oxford (1990). Oxford (1990) compiles a list of 62 language learning strategies which are divided into two main groups: direct and indirect strategies. The direct strategies involve direct manipulation of the target language and are further divided into mnemonic, cognitive and compensatory strategies. The second main group is that of indirect strategies, which are further sub-divided into metacognitive, affective and social. A lot of the examples of metacognitive strategies coincide with those of O'Malley and Chamot, focusing on organisation, planning and evaluation of learning. This study adopts Oxford's taxonomy (1990) for classifying the students' use of L2 learning strategies that are reported in the questionnaire and student interview data. Such a taxonomy has been used in much research on L2 learning strategies (e.g. Oxford and Burry-Stock 1995; Peacock 2001; Peacock and Ho 2003). Although the Strategy Inventory for Language Learning (SILL), developed by Oxford (1990), has been much criticised for its parametric measure issue, it can be argued that SILL still remains a useful instrument in L2 learning strategy research. Amerstorfer's review of the literature (2018) reiterates that 'the utility and reliability of SILL are both high' (p. 504). Moreover, it is indicated that SILL has high content validity, high predictive validity and high concurrent validity (see Amerstorfer 2018 for further details).

3 Data and methodology

The current study aims to address the following research questions (RQs):

1. To what extent do secondary school medium-of-instruction and the university's medium-of-instruction predict students' attainment in academic English proficiency?
2. To what extent do motivation and L2 learning strategies predict students' attainment in academic English proficiency?
3. How do students engage with intrinsic and extrinsic L2 motivation and L2 learning strategies inside and outside academic settings for facilitating their English language learning?

3.1 Setting

The study was carried out at The Chinese University of Hong Kong (CUHK), a government-funded university in HK. Founded in 1963, the university is unique in

that the use of Chinese as the principal language of instruction is conceived in the university's ordinance. It was established to provide education to Chinese middle school leavers for post-secondary education, particularly those who were arrivals from mainland China seeking refuge in HK in the late 1950s. The university has now evolved into a comprehensive university which offers a variety of disciplinary and interdisciplinary undergraduate and postgraduate degree programmes. The university is the only university in HK which adopts a bilingual policy, which allows academic departments to decide the medium-of-instruction for their courses. The courses are either taught in English and/or Chinese. According to the report produced by the university's committee on bilingualism (2007), the report recommends that 'depending on the nature of the academic subject, the language used at lectures should be set by the boards of various departments' (clause 14). The academic departments have the flexibility to decide on the medium-of-instruction for lectures and they need to take into account other factors including 'the language habits, the linguistic competence and the cultural background of the students and teachers, and have consulted the teachers concerned' (clause 15).

All undergraduates are required to achieve an IELTS equivalent score of 6.0 as the minimum English language required for admission. Undergraduates at the university are required to fulfil the English language requirements by taking the courses offered by the English language teaching unit in order to graduate from their respective degree programmes. The 1,000-level course was a foundation English course for year 1 students, and it was designed to provide a comprehensive English language foundation to new undergraduate students for equipping them for university studies and developing their understanding of the common features of academic English. The 1,000-level course included topics, such as the L2 writing process, L2 listening and reading and features of L2 spoken English. The 2,000-level course was an advanced course for year 2 students, or above which focused on advanced academic English skills. The 2,000-level course entailed topics, including using academic writing skills for composing specific academic genres, critically evaluating the academic language use in research papers and developing students' oral presentation skills for persuasion.

3.2 Data collection

The current study includes two research instruments: a questionnaire and follow-up semi-structured interviews with individual students from different faculties.

The comprehensive questionnaire is organised into two sections. The first section of the questionnaire asked the participants to indicate their faculty, their year of study, their gender, their secondary school's medium-of-instruction, the

types of secondary schools that they attended (e.g. government school and international school), the medium-of-instruction that is used in their lectures and tutorials, their English proficiency grades prior to enrolling at the university (i.e. IELTS scores or equivalent English language test results) and their use of language(s) at home. The second part of the questionnaire consists of 36 Likert-type statements related to the students' frequency of using English for academic purposes, frequency of using English outside class, intrinsic and extrinsic motivation in learning English and English language learning strategies (see Section 3.5 for further details). Cronbach's alpha for the different sections ranged from 0.857 to 0.896, which suggests that the internal consistency reliability of the questionnaire was high (Dörnyei 2007).

Additionally, follow-up individual semi-structured interviews were carried out with students of various levels of English attainment in order to gain more in-depth accounts of their previous and current language experiences (within and outside campus) and English language learning strategies.

3.3 Participants

A total of 349 undergraduate students completed the questionnaire, who were drawn in roughly equal distributions from each of the university's faculties. A convenience sampling strategy was employed in order to recruit student participants in completing the questionnaire. 7.7% of the students were from the Faculty of Arts, 15.1% of the students were from the Faculty of Business, 20% of the students were from the Faculty of Engineering, 9% of them were from the Faculty of Medicine, 23% of them were from the Faculty of Science and 25% of the students were from the Faculty of Social Sciences. All questionnaire participants were L2 English speakers and they all have scored the minimum English language entrance requirement (i.e. IELTS overall band 6 or equivalent) for enrolling on their respective degree programmes. 81.7% of the participants were HK local students, 12% of the participants were from Mainland China and 6.3% of the participants were classified as international students who come from overseas countries. 4% of the students were year one undergraduates, 6.6% were year two undergraduates, 37.1% of them were year three undergraduates and 52.3% of them were year 4 or above. Note that the duration of most of the degree programmes is four years. Some of the degree programmes, such as education and medicine, demand five years of study.

Additionally, the individual semi-structured interviews were held with six students who came from a range of academic fields, and this was largely achieved, with one student in the Faculty of Arts, one from the Faculty of Social Sciences, one

from the Faculty of Engineering, one from the Faculty of Medicine and two from the Faculty of Science. All participating students achieved an A grade (i.e. 4.0 Grade Point Average) in both 1,000- and 2,000-level academic English language courses and based on the questionnaire data, these students are all highly motivated to learn English (both intrinsically and extrinsically). These high-performing students are chosen to participate in the interviews since their accounts can enable us to understand the potential success factors for high English attainment, particularly the student's language learning motivation and their use of language learning strategies. Although the conclusions that can be drawn from these interviews are limited due to the low number of students who volunteered to participate in the interviews, these students come from different academic disciplines and graduated from different secondary schools, ranging from adopting different medium-of-instruction, from local schools to overseas high school. Hence, the interview data can offer some insight into the students' perceptions of success in English language learning. The interviews were audio-recorded and conducted in the participant's first language which allows them to offer adequate detail in their responses.

3.4 Key measures

3.4.1 Demographic and institutional variables

Participants self-reported their genders, and the major language of instruction used back in secondary schools. Gender had three categories, including female, male and not to disclose. We coded female as the reference category. Students' primary language of instruction in secondary schools had three categories, including English as medium-of-instruction, Chinese as medium-of-instruction and other languages as medium-of-instruction. We coded EMI as the reference category.

Participants also specified their current faculty at the study university and the medium-of-instruction that is used during lectures and tutorials. There were six faculties: natural sciences, arts, business, engineering, medicine and social sciences. We coded natural sciences as the reference category. Predominant medium-of-instruction used in lectures and tutorials were both coded as binary variables. If participants received more than 90% of their lectures in English, then we assigned the value 1 to English as the predominant medium-of-instruction in lectures. If participants received more than 90% of their tutorials in English, we assigned the value 1 to English as the predominant medium-of-instruction in tutorials.

3.4.2 Language abilities at the entry to university

Participants self-reported their post-secondary English qualification and their grades. These qualifications included the HK Diploma of Secondary Education English Language examination (i.e. HK's university entrance examination for secondary school leavers), the Gaokao (i.e. the standardised English test in traditional mainland curriculum), IELTS and the Test of English as a Foreign Language. We converted these scores into their IELTS equivalents in Table 1 based on the score comparison studies conducted by the examination boards, including Hong Kong Examination and Assessment Authority and Education Testing Service (see Table 1 for further information).

3.4.3 Language learning motivation

Participants' intrinsic and extrinsic language learning motivation in university was adapted from Detaramani and Chan's study (1999) and Gan's study (2003), which were originally designed for the HK higher education contexts. There were five questions on intrinsic motivation, which had good internal consistency with Cronbach's alpha of 0.84. Through principal component analysis, only one component was extracted (i.e. intrinsic motivation) and it explained 62% of the total variances. There were three questions on extrinsic motivation, which had good internal consistency with Cronbach's alpha of 0.85. There was only one component extracted through principal component analysis (i.e. extrinsic motivation) and it explained 77% of the total variances. Questions are included in Table 1.

3.4.4 Language learning strategies

Measures of participants' language learning strategies were adapted from Peacock and Ho's study (2003), whose scale had previously been validated in the HK context. After piloting, deleting questions that would otherwise lower our reliability, and consulting with experts for the face validity of these questions, we came down to 10 questions. We further grouped the cognitive/metacognitive questions together, and social and affective questions together. There were 7 questions on cognitive/metacognitive strategies, which had good internal consistency with Cronbach's alpha of 0.85. Only one component was extracted from principal component analysis, which explained 53% of the total variances. There were three questions on social/affective strategies, which had good internal consistency with Cronbach's alpha of 0.79. Only one component was extracted

Table 1: Details on operationalization of the variables.

Variable name	Operationalisation/questions		
IELTS equivalent score	HKDSE English language subject level	TOEFL iBT	GaoKao
IELTS 6	Level 4	60–78	120–150
IELTS 6.5	Level 5	79–93	—
IELTS 7	Level 5*	94–101	—
IELTS 7.5	Level 5**	102–109	—
IELTS 8	—	110–114	—
IELTS 8.5	—	115–117	—
IELTS 9	—	118–120	—
Language learning motivation			
Intrinsic motivation	—	I have a sense of satisfaction if I am competent in English	
	—	I want to learn English well because it can help me understand western culture	
	—	I am willing to socialise with international friends in English	
	—	I want to work in an international organisation	
	—	I am interested in volunteer activities, exchange or internship in English-speaking countries	
Extrinsic motivation	—	I want to learn English well because it can help me to do better in other academic subjects	
	—	English ability would help me get a better-paying job	
	—	A knowledge of English would make me a better educated person	
Language learning strategies			
Cognitive/meta-cognitive	—	I use new English words in a sentence so I can remember them	
	—	I think of relationship between what I already know and new things I learn in English	
	—	I prefer writing notes, messages, letters, or reports in English if there is a chance	
	—	I say or write new English words several times	
	—	If I can't think of an English word, I use a similar word or phrase	
	—	I take note of my English mistakes and use that information to help me do better	
	—	I pay attention when someone is speaking English	
Social/affective	—	I try to relax whenever I feel afraid of using English	
	—	I encourage myself to speak English even when I am afraid of making a mistake	
	—	If I do not understand something in English, I ask the speaker to clarify	
Academic English language course grades			
1,000 (year 1)	—	50% weighting on the individual academic essay	
	—	25% on critical reading and response tasks	
	—	25% on the individual speaking assessment about the features of spoken English	
2,000 (year 2 and above)	—	50% weighting on an academic English essay	
	—	50% an individual presentation for persuasion	

through the principal component analysis that explained 71% of the total variances.

3.4.5 1,000- and 2,000-level academic English course grades

Students' grades in the 1,000 and 2,000 English language courses were used as outcome measures of the students' academic English language performance. It can be argued that using students' grades in 1,000 and 2,000 English language courses is somewhat a crude measure of students' success in academic English language learning because using a standardised English proficiency test can better assess the students' academic English proficiency levels during their time at the university (e.g. Brown et al. 2018; DiFino and Lombardino 2004; Vogt and Tsagari 2014). Nonetheless, it is not possible for us to request all 349 undergraduates to take a standardised English proficiency test. As Brown et al. (2018) argue, collecting course grades can be done quickly and efficiently within an institutional context. Moreover, final course grades have been used in previous SLA studies as measures of L2 proficiency since course grades are of greater social capital and relevant to the students than any other L2 achievement indicators in some exam-oriented foreign language contexts (e.g. Cochran et al. 2010; Laufer and Goldstein 2004; Marcos-Llinás and Juan-Garau 2009; Wong 1996).

Despite the limitation of the study, these students' scores on their 1,000- and 2,000-level academic English language courses constitute the primary assessments of undergraduates' English language performance at the university. This is because all undergraduates have to take these courses offered by the English language teaching unit to fulfil the English language requirements of the institution and these courses aim to develop students' academic English proficiency to learn the essential academic English skills for university studies. We employed both 1,000- and 2,000-level course scores for evaluating the student's academic English proficiency because the 1,000-level course was only provided to Year 1 undergraduate students and this group of students had only accumulated 1 year of university experience. On the other hand, the 2,000-level course was an advanced course which was offered to year 2 students or above and it further assessed the student's academic English skills (see Section 3.1 for more information). Since this study adopts a cross-sectional approach in comparing students' academic English proficiency from different years of study, it is, therefore, necessary for us to use 1,000- and 2,000-level course grades as outcome measures of the students' academic English language performance. In terms of the makeup of the 1,000- and 2,000-level course grades, details can be found in Table 1. All the assessments were set by the course coordinator and the first marking was shared between the course

teachers. Samples of the student assessments were moderated by the course coordinator.

3.5 Data analysis

RQ one explores the secondary school-level influence on students' academic English language performance in university (i.e. 1,000- and 2,000-level academic English course grades). Thus, this question is answered by two simultaneous linear regressions controlling for students' sociodemographic backgrounds, academic English ability at the entry to university, the primary medium of instruction in secondary school, student's faculty, and medium-of-instruction at university. In addition to these variables in RQ one, RQ two further examines the role of learner-level variables, including intrinsic and extrinsic motivation, cognitive/meta-cognitive and social/affective strategies in predicting both 1,000- and 2,000-level academic English course grades. Thus, in order to answer RQ two, we conducted two hierarchical regressions on top of the two regression analyses in RQ one.

To investigate RQ three, content analysis is used to analyse the interview transcripts. The first stage of the analysis entails an iterative process of reading and annotating the transcripts with comments and codes. These initial codes are then categorised into different themes that capture the recurring patterns in the interview data. The focus of the analysis is on the students' comments on their own English language experiences and their learning strategies for enhancing their own general and academic English proficiency.

4 Results

4.1 Descriptive statistics

Table 2 demonstrates participants' background information at both secondary-school level and university level. In terms of medium-of-instruction used in secondary schools, the majority of participants received EMI (64.8%), followed by CMI (33.2%). Regarding participants' faculties, the majority of them came from Social Sciences (24.9%), followed by Natural Sciences (22.9%), Engineering (20.3%), Business (15.1%), Medicine (9.1%) and Arts (7.7%). Among these participants, 66% of them received EMI in lectures and 63.7% of them received EMI in tutorials in CUHK.

Table 2: Summary of variables.

Variable (range)	Mean (SD)/ proportion
Gender	
Male	44.9%
Female	52.9%
Not to disclose	2.2%
Primary medium of instruction in secondary school	
English as primary medium of instruction (EMI)	64.8%
Chinese as primary medium of instruction (CMI)	33.2%
Other language as primary medium of instruction	2%
English language abilities at entry to university as measured by IELTS/IELTS equivalent (2.5–8.5)	6.48 (0.78)
University-level information	
Faculty	
Arts	7.7%
Business	15.1%
Engineering	20.3%
Medicine	9.1%
Natural science	22.9%
Social sciences	24.9%
Lectures predominantly used English as medium of instruction	66%
Tutorials predominantly used English as medium of instruction	63.7%
Intrinsic motivation (−8.1 to 2.4)	0 (1.76)
Extrinsic motivation (−8.2 to 1.6)	0 (1.52)
Cognitive/metacognitive strategies (−8.7 to 3.7)	0 (1.92)
Social/affective strategies (−5.7 to 2.4)	0 (1.46)
1,000-level academic English course grade (2.3–4)	3.21 (0.36)
2,000-level academic English course grade (2.3–4)	3.31 (0.36)

4.2 The influence of medium-of-instruction in both secondary schools and university on students' academic English proficiency

In order to answer the first RQ, we have controlled for both secondary-school-level and university-level information. Table 3 demonstrates the standardised results generated by linear regression analyses on predicting both 1,000-level (i.e. model 1) and 2,000-level grades (i.e. model 2). We have conducted post-estimation tests, which ensured that our analyses satisfied the assumptions of linearity, normality, no-multicollinearity, no-autocorrelation and homoscedasticity.

Table 3: Unstandardised and standardised linear regression results for research question 1.

	Model 1: 1,000-level grade			Model 2: 2,000-level grade		
	<i>B</i> (SE)	β	<i>p</i> -Value	<i>B</i> (SE)	β	<i>p</i> -Value
Gender (with reference to female)						
Male	−0.007 (0.039)	−0.009	0.864	−0.0023 (0.038)	−0.003	0.953
Not to disclose	−0.001 (0.124)	−0.0004	0.993	0.062 (0.123)	0.026	0.615
Primary medium of instruction in secondary school (with reference to English as primary medium of instruction)						
Chinese as primary medium of instruction (CMI)	−0.006 (0.041)	−0.007	0.889	0.028 (0.04)	0.037	0.479
Other language as primary medium of instruction	−0.222 (0.135)	−0.085	0.1	0.019 (0.13)	0.007	0.888
English language abilities at entry to university as measured by IELTS/IELTS equivalent (2.5–8.5)	0.147 (0.026)	0.316 ^a	<0.001	0.125 (0.025)	0.274 ^a	<0.001
Faculty (with reference to natural sciences)						
Arts	0.003 (0.079)	0.003	0.966	−0.049 (0.078)	−0.037	0.529
Business	0.084 (0.062)	0.083	0.176	−0.09 (0.061)	−0.091	0.143
Engineering	0.057 (0.057)	0.063	0.315	−0.123 (0.056)	−0.138 ^b	0.03
Medicine	0.155 (0.073)	0.123 ^b	0.035	−0.049 (0.072)	−0.04	0.499
Social sciences	0.108 (0.055)	0.128	0.052	−0.074 (0.054)	−0.089	0.177
Lectures predominantly used English as medium of instruction at university	0.08 (0.053)	0.105	0.132	0.16 (0.053)	0.213 ^c	0.002
Tutorials predominantly used English as medium of instruction at university	0.007 (0.052)	0.0098	0.888	−0.015 (0.052)	−0.02	0.773
Number of cases	349			349		
Adjusted <i>R</i>-square	12.03%			10.77%		
<i>F</i> statistics	<i>F</i> (12,336) = 4.97			<i>F</i> (12,336) = 4.5		

^a*p* < 0.001, ^b*p* < 0.05, ^c*p* < 0.01.

Model 1 explained 12.02% variances in 1,000-level grade, with $F(12,336) = 4.97$, $p < 0.001$. In terms of medium-of-instruction in secondary school, students who received Chinese as medium-of-instruction did not obtain a significantly different 1,000-level grade in comparison to those who received English as medium-of-

instruction ($\beta = -0.007$, $p = 0.889$). Regarding medium-of-instruction in university, English predominantly used in university lectures ($\beta = 0.105$, $p = 0.132$) and tutorials ($\beta = 0.0098$, $p = 0.888$) were not significant predictors of 1,000-level grade.

Model 2 explained 10.77% variances in 2,000-level grade, with $F(12, 336) = 4.5$, $p < 0.001$. In terms of medium-of-instruction in secondary school, students who received Chinese as medium-of-instruction did not obtain a significantly different 2,000-level grade in comparison to those who received English as medium-of-instruction ($\beta = 0.037$, $p = 0.479$). Similarly to model 1, students' 2,000-level grade was not significantly predicted by the tutorial's medium-of-instruction ($\beta = -0.02$, $p = 0.773$). However, participants who received predominantly EMI in university lectures were more likely to receive a higher 2,000-level grade (i.e. $\beta = 0.213$ and $p = 0.002$).

4.3 Students' motivation and L2 learning strategies predicting academic English proficiency

Table 4 demonstrates the results after adding in learner-level factors, where model 3 predicts 1,000-level grade and model 4 predicts 2,000-level grade. Model 3 explained 19.7% of total variances in 1,000-level grade, with $F(16, 332) = 6.34$. Compared to model 1, the addition of learner-level variables resulted in 7.67% change in R^2 , with $F(4, 332) = 9.02$, $p < 0.001$. Model 4 explained 19.8% of total variances in 2,000-level grade, $F(16, 332) = 6.37$. Compared to model 2, the addition of learner-level variables resulted in 9.03% change in R^2 , with $F(4, 332) = 10.46$, $p < 0.001$.

Similarly to model 1, as shown in model 3, there were no significant differences in 1,000-level grade between participants who received EMI in secondary school and those who received CMI in secondary school. Receiving predominantly EMI in university lectures ($\beta = 0.056$ and $p = 0.41$) or in university tutorials ($\beta = 0.02$ and $p = 0.765$) did not make a significant difference in 1,000-level grade.

However, in model 3, students who adopted more cognitive and metacognitive learning strategies with English learning in university were more likely to score higher on 1,000-level grade, i.e. $\beta = 0.197$ and $p = 0.012$. Moreover, the 1,000-level grade was not significantly predicted by university students' intrinsic ($\beta = 0.034$ and $p = 0.41$), extrinsic motivation ($\beta = -0.056$ and $p = 0.408$), and social affective strategies ($\beta = 0.136$ and $p = 0.059$) with L2 English learning.

Similarly to model 2, as shown in model 4, medium-of-instruction used in secondary school did not make significant differences regarding their influences on 2,000-level grade but using English predominantly in university lectures predicted higher 2,000-level grade, i.e. $\beta = 0.144$ and $p = 0.034$. In contrast, using

Table 4: Unstandardised and standardised linear regression results for research question 2.

	Model 3: 1,000-level grade			Model 4: 2,000-level grade		
	<i>B</i> (SE)	β	<i>p</i> -Value	<i>B</i> (SE)	β	<i>p</i> -Value
Gender (with reference to female)						
Male	0.003 (0.037)	0.004	0.932	-0.023 (0.036)	0.032	0.53
Not to disclose	0.054 (0.12)	0.022	0.655	0.083 (0.117)	0.035	0.48
Primary medium of instruction in secondary school (with reference to English as primary medium of instruction)						
Chinese as primary medium of instruction (CMI)	-0.019 (0.039)	-0.025	0.619	0.018 (0.038)	0.024	0.63
Other language as primary medium of instruction	-0.253 (0.13)	-0.097	0.051	-0.009 (0.127)	-0.003	0.95
English language abilities at entry to university as measured by IELTS/ IELTS equivalent (2.5–8.5)	0.113 (0.026)	0.242 ^a	<0.001	0.091 (0.025)	0.2 ^a	<0.001
Faculty (with reference to natural sciences)						
Arts	-0.011 (0.076)	-0.008	0.884	-0.066 (0.074)	-0.049	0.38
Business	0.062 (0.06)	0.061	0.3	-0.13 (0.059)	-0.13 ^b	0.028
Engineering	0.07 (0.054)	0.077	0.2	-0.118 (0.053)	-0.133 ^b	0.028
Medicine	0.148 (0.07)	0.117 ^b	0.036	-0.052 (0.069)	-0.042	0.45
Social sciences	0.123 (0.053)	0.146 ^b	0.02	-0.057 (0.052)	-0.069	0.27
Lectures predominantly used English as medium of instruction at university	0.043 (0.052)	0.056	0.41	0.108 (0.051)	0.144 ^b	0.034
Tutorials predominantly used English as medium of instruction at university	0.015 (0.051)	0.02	0.77	0.012 (0.05)	0.016	0.82
Intrinsic motivation	0.007 (0.016)	0.034	0.41	0.008 (0.016)	0.039	0.62
Extrinsic motivation	-0.013 (0.016)	-0.056	0.41	0.031 (0.016)	0.133 ^b	0.05
Cognitive/metacognitive strategies	0.037 (0.015)	0.197 ^b	0.012	0.011 (0.014)	0.061	0.43
Social/affective strategies	0.034 (0.018)	0.136	0.059	0.041 (0.018)	0.166 ^b	0.022
Number of cases	349			349		
Adjusted <i>R</i>-square	19.7%			19.8%		
<i>F</i> statistics	<i>F</i> (16,332) = 6.34			<i>F</i> (16,332) = 6.37		

^a*p* < 0.001, ^b*p* < 0.05.

English predominantly in university tutorials did not hold a significant impact on 2,000-level grade.

However, in model 4, among all the learner-level factors, social and affective learning strategies (i.e. $\beta = 0.166$ and $p = 0.022$) and extrinsic motivation (i.e. $\beta = 0.133$ and $p = 0.05$) significantly and positively predicted 2,000-level grade. In contrast, cognitive and metacognitive learning strategies and intrinsic motivation were not significant predictors of 2,000-level grade.

4.4 Qualitative analysis

In the quantitative analysis, the results indicate that the medium-of-instruction of students' secondary schools does not play a role in determining their academic English proficiency at university. Moreover, students' cognitive and metacognitive strategy use, alongside social and affective strategy use, students' extrinsic motivation and attending EMI lectures contribute to the success of students' English language learning. In this section, we will be discussing the potential success factors that are identified from the interviews with high-performing students, which include L2 strategy use and motivation.

4.4.1 L2 strategy use: use of cognitive and metacognitive strategies

Reading English books and articles and watching TV movies are the most common metacognitive strategies that many students have mentioned. Student A is a year 4 law student, and she previously attended a British secondary school before joining the university. In the following excerpt, she explains how reading English books and watching English TV programmes enhance her general English proficiency:

Interviewer: What are the strategies that you adopted for English improvement?

Student A: When I was younger, when I was still studying at secondary school, I adopted a very academic way, so like doing practices all the time, doing past papers, to try to get everything right. But as soon as I went into university, I started studying English in a way that is more free. For example, I start reading a lot of different books in English, and I start watching lots of programmes on Netflix or on YouTube. So, it has become more on leisure. So, one week before I went into university, I started binge-watching Netflix, the old programmes on Netflix like "Friends".

Student A recounts her prior English learning experience which involves using metacognitive strategies, such as 'doing past papers' and adopting 'a very academic way' of learning English. As she commenced her tertiary education, she

employed different kinds of metacognitive strategies, including reading English books in different genres and watching English TV programmes via Netflix and YouTube. She believes that engaging in these activities regularly allows her to learn English in a stress-free manner.

Similar to student A, student B, who is a year 4 Anthropology student, expresses similar ways of learning English:

Student B: First of all, I think, watching movies or listening to podcasts allows you to get used to or assimilate to Western culture, because I love, especially speaking wise, because writing and speaking in English is a little bit different. And when you speak in English it really depends on the context on the environment, and on the people that you're speaking to. And for a person to learn that, I think the best way is through maybe watching dramas, or listening to podcasts and to see how conversations build up in different contexts. And I guess it also depends on what type of dramas and stuff, or podcast you're listening to and you absorb different types of vocabulary unconsciously. You have less of a burden in learning English in this way I think.

Student B attended a CMI secondary school in HK and prior to studying at the university, she achieved an IELTS band 7 which classifies her as a proficient English user. Student B relates her success in English learning to the employment of cognitive strategies, including watching movies and drama and listening to podcasts in English in order to observe how English is being used in different social contexts. By doing so, it enables her to develop an interest in learning the western culture and enhance her language awareness in terms of the ways of communicating ideas through different modes of communication (English writing and speaking in this case).

4.4.2 L2 strategy use: social and affective strategy

Some students attribute their success in English learning to their effort in speaking English outside the classroom. This is achieved through communicating with international students or academic staff at the university.

Student A: I was a member of the rugby team at the university and now I speak for my college.

Interviewer: How was the experience?

Student A: I think there were a lot of foreigners in the rugby team at the university before Covid-19. Now they just went back to their countries. I think playing sports is a fun way to integrate different people from different language backgrounds. Because of sports, we use different actions and gestures we can understand more. It helps non-native speakers to understand English more because we can use the gestures. Even if we don't understand a word, we can just use actions or gestures to make a person understand what that means. So, I just think that it is a great way to integrate people from different language backgrounds.

In the interview, student A explains that participating in intercultural communication with people who come from different linguistic and cultural backgrounds creates opportunities for student A to immerse in an English-speaking environment. She describes that these events make her ‘felt natural because I just came back from the UK’. In this extract, it is noticeable that student A has displayed an understanding of using diverse communicative resources (verbal English utterances and gestures in this case) to include different people in the community. Such a practice is often referred to as translanguaging, which involves using available linguistic and multimodal resources for promoting social inclusion and participation (Tai 2022, forthcoming; Tai and Li 2020, 2021a, 2021b, 2021c). It can be argued that student A is adopting a social strategy in order to engage in social interaction with other international students in order to improve language learning and cultural understanding (Oxford 1990).

Although the questionnaire data illustrates that social and affective strategies play a more important role in contributing to students’ success in English learning, the interview data shows that the high achieving students mostly refer to both their use of cognitive strategies and social strategies for facilitating their English learning. This may be the result of selection bias, that is of motivated students who volunteered to take part in the semi-structured interviews. Nevertheless, it is noted that all of the six students explain how they enjoy learning English through doing English-related leisure activities, such as listening to English songs and movies and reading English books.

4.4.3 L2 motivation

Extrinsic motivation is the most common form of motivation for successful students attributed to when they learn English. This is evidenced in some of the students’ responses as they explain their reasons for motivating them to acquire a high level of academic English proficiency.

Student A: My motivation has kind of developed from a point of view myself to a larger point of view basically. When I was young, my parents told me and my sister to study English better, to be more proficient in English because they didn’t have the privilege to study English when they were young. So, they kind of contributed a lot. They gave us everything to learn and to study, so my sister and I become very diligent. That was the first reason for me to learn English in a very hard way like trying to improve all the time. And then, in the university, the motivation for me to learn English is to be more professional and because I became eager to become an elite in my profession, so I want to learn English better.

It is evidenced that student A's family values the importance of education and her family was keen to financially support her overseas study plan in order to enable her to receive the best secondary education in the UK. Hence, student A's family influence and her self-determination for honouring her family's expectations are the extrinsic motives which encourage her to improve her academic English proficiency. It is also noticeable that student A also states her goal to be a successful lawyer and acquiring a strong English proficiency is a prerequisite for becoming an 'elite' in the law profession.

However, apart from extrinsic motives, some successful learners also attribute high importance to intrinsic motives. This is evidenced in student C's account:

Student C: I didn't really target at achieving any particular level. My only goal would be DSE. I just wanted to get the best score that I could possibly get.

Interviewer: Did you have any reading habit during primary or secondary school?

Student C: When I started studying at university, I have followed some Instagram accounts that regularly posting newspapers or texts. I think in general I do spend more time on English now at the university than before.

Interviewer: Do you think that you are more motivated to learn English now?

Student C: I am more interested in English now. At least I won't have negative feelings upon this language. When I was in secondary school, I needed to learn English for public exam and there were lots of drillings. English was really boring; it didn't look interesting at all. Since I am now exposed to a lot more leisure English activities, I am way more motivated to improve my English now.

Student C is a year 4 Biomedical Science student, and he previously attended a CMI local school in HK. Before joining the university, he achieved an IELTS band 8 score, which classifies him as a proficient English user. In the interview, student C explains how he transitions from attending to extrinsic motivation to intrinsic motivation. When he was a secondary school student, he only focused on achieving good grades in his English language public examination. As he received more opportunities to engage in more English activities at the university, he gradually developed an interest in learning English through reading English texts and engaging in English-related activities.

Overall, in the student interviews, students display a genuine interest in learning English, and they explore different ways for enhancing their English proficiency. It is observed that undergraduates with high academic English proficiency levels tend to relate their success in learning English with their L2 strategy use (particularly the use of cognitive and social strategies) and intrinsic and extrinsic motivation.

5 Discussion and conclusion

For the first part of our quantitative analysis which explores the influence of secondary school and university medium-of-instruction on students' L2 academic English proficiency, the results illustrate that using EMI in university lectures and university tutorials and the adoption of any named language as medium-of-instruction in secondary schools are not significant predictors of students' 1,000-level course grades. However, in comparison to the 2,000-level course grades, the medium-of-instruction in secondary schools remains an insignificant predictor of students' 2,000-level course grades. It is noted that students' attendance of EMI lectures at university is a significant predictor which contributes to higher 2,000-level course grades.

After adding the learners' factors (motivation and language learning strategies) into the models, the analysis of the results illustrates a different picture. For the 1,000-level course, predominately using EMI in university lectures and tutorials and the medium-of-instruction in secondary school remain insignificant. Students' language learning motivation (intrinsic and extrinsic) and social-affective learning strategies do not significantly contribute to the students' success in English learning. However, students' cognitive and metacognitive learning strategies significantly predicted higher 1,000-level course grade. In comparison to the 1,000-level course grades, students' use of social and affective strategies and their extrinsic motivation become statistically significant for predicting 2,000-level grade. Medium-of-instruction used in students' secondary school remain statistically insignificant, but students' attendance of EMI lectures still has significant differences in students' performance on the 2,000-level course grades.

In previous research studies, researchers (e.g. Evans and Morrison 2011; Evans and Morrison 2018; Lin and Morrison 2010) suggest that undergraduates who received CMI secondary education typically have lower academic English proficiency than those from EMI secondary schools. Students from L1-medium-of-instruction secondary school typically struggle to cope with the English language demand of university study in comparison to students who receive EMI secondary education (Evans and Morrison 2011, 2018). Previous research also suggests that the influence of secondary school medium-of-instruction is an important determinant of undergraduates' English proficiency since EMI secondary schools allow students to receive more exposure to English. This potentially enables students who previously attend EMI secondary school to activate more academic vocabulary when they are undertaking their assignments at university (Lin and Morrison 2010). However, the quantitative analysis in this study shows that the secondary school medium-of-instruction is not the pre-determined factor which contributes

to the students' success in achieving high attainment in English. Such a finding challenges the argument suggested by Lin and Morrison (2010) and Evans and Morrison (2018). The current finding implies that undergraduate students' academic English proficiency will not be hindered by their secondary school medium-of-instruction. Students from EMI or CMI secondary school background can enhance their academic English proficiency in various ways, which includes attending EMI university lectures, deploying cognitive and metacognitive strategies and social and affective L2 learning strategies, and developing their extrinsic motivation in learning English.

Additionally, the quantitative analysis demonstrates the usefulness for university to adopt EMI to deliver lectures at university for promoting students' academic English proficiency. This study confirms the findings of previous studies that examine how studying academic subjects through EMI can lead to improvement in university students' academic English proficiency (e.g. Rogier 2012; Yuksel et al. 2021). As Evans and Morrison (2011) argue, EMI lectures allow students to expose to English and this is possibly due to the lecturers' inclination to speak English and conform with the EMI policy. However, the study indicates that EMI tutorial is not a predicting factor of students' academic English proficiency. This is possibly because tutorials typically involve students in engaging in group discussions and students tend to use Cantonese in small group activities and only occasionally use English when reporting answers to the discussion tasks (Evans and Morrison 2011). This affirms Thompson's et al. (2022) argument that EMI lectures have the potential in shaping students' English L2 proficiency when listening to lectures in English.

In response to RQ 2 and RQ 3, the questionnaire and interview data highlight the important role of learners' factors in predicting students' English learning. This includes students' use of cognitive and metacognitive strategies, social and affective strategies and the students' extrinsic motivation. In the interview data, it is noticeable that high-achieving students, such as students A and C, tend to find ways to participate in social activities that require using English in order to create opportunities for them to experiment with using the language and enhance their speaking competence. Such a view affirms the findings from considerable research literature which explores the benefits of learning L2 through participating in social activities outside the classroom (e.g. Brandt and Jenks 2011; Greer and Wagner 2021).

The study has important implications for university policymakers worldwide and in HK. These findings affirm the significance for researchers and institutions to pay attention to the different institutional and learners' factors that contribute to the outcomes of students' L2 proficiency. The findings suggest that other than the university's role in delivering lectures in the university's medium-of-instruction

(EMI in this case), the university can also facilitate the creation of various social activities for encouraging students to engage in using English outside the classroom and develop students' extrinsic motivation in learning English. University English language courses can also play a role in teaching various language learning strategies, particularly cognitive and metacognitive, social and affective L2 learning strategies, for enabling students to learn English effectively. Moreover, the findings suggest that students who come from secondary school that adopts languages other than English as the medium-of-instruction may not put them in a disadvantaged position in enhancing their academic English proficiency. This means that all students from different secondary school backgrounds can potentially further improve their English proficiency as long as they are propelled by pragmatic learning strategies, sheer hard work and developing a genuine interest in learning English. A better language support system could be put in place in order to develop students' academic English skills. This can equip all students to use English to participate in academic- and non-academic-related activities.

Though important these findings are, these findings should be considered within the limitations of the study. Firstly, this study focuses on students' 1,000- and 2,000-level academic English course grades as a sole outcome measure of language proficiency. Future research may invite students to take standardised English proficiency assessments in order to evaluate both their general and academic English proficiency and discover whether the results are similar, different or comparable. Secondly, the study adopts a cross-sectional approach in comparing students' 1,000- and 2,000-level course grades. We recognise that a cross-sectional design cannot represent the concurrent students' intrinsic and extrinsic motivation when taking the 1,000- and 2,000-level academic English courses. It may also run the risk of confounding variables, such as the teacher effect, discipline-based differences in EMI contexts and so on. Therefore, future research could potentially take these factors into account.

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Bionotes

Kevin W. H. Tai

Academic Unit of Teacher Education and Learning Leadership, Faculty of Education, The University of Hong Kong, Hong Kong

kevin.tai@hku.hk

<https://orcid.org/0000-0002-2098-8082>

Kevin W. H. Tai is Assistant Professor of English Language Education at the Faculty of Education in The University of Hong Kong and Honorary Research Fellow at IOE, UCL's Faculty of Education and Society in University College London (UCL). Additionally, Kevin Tai is the Associate Editor of *The Language Learning Journal* (ECIS-listed Journal; Routledge) and Assistant Editor of the *International Journal of Bilingual Education and Bilingualism* (SSCI-listed Journal; Routledge). His research interests include: language education policy, classroom discourse, translanguaging in multilingual contexts, conversation analysis for second language acquisition and qualitative research methods (particularly Multimodal Conversation Analysis, Interpretative Phenomenological Analysis and Linguistic Ethnography). Kevin Tai is a Fellow of the Royal Society of Arts (FRSA) and an Associate Fellow of the Higher Education Academy (AFHEA).

Yiran Vicky Zhao

Faculty of Education, University of Cambridge, Cambridge, UK

yz462@cam.ac.uk

<https://orcid.org/0000-0002-0841-967X>

Yiran Vicky Zhao is PhD Candidate and LEGO Foundation Cambridge Trust Scholar at the Faculty of Education, University of Cambridge. Yiran Vicky Zhao's research interests include educational inequalities, higher education, child development and neurodiversity.