State-of-the-Art Article

A systematic review of English medium instruction in higher education

Ernesto Macaro University of Oxford, UK
Ernesto.macaro@education.ox.ac.uk

Samantha Curle University of Oxford, UK
samanthamcurle@gmail.com

Jack Pun University of Oxford, UK
jackpun@me.com

Jiangshan An University of Oxford, UK
Jiangshan.an@education.ox.ac.uk

Julie Dearden University of Oxford, UK
Julie.dearden@hertford.ox.ac.uk

After outlining why a systematic review of research in English medium instruction (EMI) in higher education (HE) is urgently required, we briefly situate the rapidly growing EMI phenomenon in the broader field of research in which content and language have been considered and compare HE research outputs with those from other phases of education. An in-depth review of 83 studies in HE documents the growth of EMI in different geographical areas. We describe studies which have investigated university teachers' beliefs and those of students before attempting to synthesise the evidence on whether teaching academic subjects through the medium of English as a second language (L2) is of benefit to developing English proficiency without a detrimental effect on content learning. We conclude that key stakeholders have serious concerns regarding the introduction and implementation of EMI despite sometimes recognising its inevitability. We also conclude that the research evidence to date is insufficient to assert that EMI benefits language learning nor that it is clearly detrimental to content learning. There are also insufficient studies demonstrating, through the classroom discourse, the kind of practice which may lead to beneficial outcomes. This insufficiency, we argue, is partly due to research methodology problems both at the micro and macro level.

1. Introduction

There are many educational settings in which 'content' is taught in a language other than the home language of the students. These cover all the phases of education, pre-school, primary, secondary and tertiary as well as any specially designed classes for particular groups of students (e.g. migrants). In North America the phenomenon is sometimes labelled 'immersion' or 'content-based learning' or 'content-based language learning' or 'content-based language education'. In Europe, but not exclusively in Europe, it is usually labelled 'content and language integrated learning' (CLIL) or 'integrating content and language in higher education' or 'English-taught programmes'. EMI is a term used ubiquitously geographically and, usually but not exclusively, applied to HE. The overall global picture, as we shall further see below, is therefore extremely complex and sometimes confusing. In this paper we use the label 'English medium instruction' which we define as:

> The use of the English language 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.

We will return to the issue of labelling and definition in a moment. For now we can confidently report that EMI is a growing global phenomenon in all phases of education and educational settings (Dearden 2015). The acceleration in its growth, however, is particularly of note in HE (Smit 2010; Brenn-White & Faethe 2013; Wächter & Maiworm 2014; Fenton-Smith, Humphries & Walkinshaw 2017). Globally more and more universities are caught up in the rush to offer both undergraduate and postgraduate programmes through the medium of English (Lasagabaster, Doiz & Sierra 2014; Earls 2016). The reasons for this are various and context-dependent, and they are explored in Section 3.4 but, in summary, they include: a perceived need to internationalise the university (see Knight 2013, for a definition of 'internationalisation') in order to render it more prestigious; needing to attract foreign students because of falling enrolment numbers of home students through changing demographics, national cuts in HE investment; the need of the state sector to compete with the private sector; and the status of English as an international language, particularly in the domain of research publications.

More than ten years ago, in this journal, Coleman (2006:1) signalled the implementation problems associated with the 'inexorable increase in the use of English' HE. The rate of that increase has accelerated, as we shall attempt to demonstrate, and a number of commentators and researchers have referred to its dangers (Graddol 2006; Jenkins 2014). It is one of the aims of the review to ascertain the extent to which the implementation problems have been addressed.

Another aim is to assess the range and quality of the research into EMI in HE such that one might be able to reflect, based on solid evidence, the possible benefits of EMI. Numerous researchers and commentators (Kirkpatrick 2011; Shohamy 2012; Jiménez-Castellanos et al. 2014) have sent out calls for research able to determine the extent to which English language learning benefits from EMI whilst at the same time not demonstrating any excessive cost to content learning. Of course, it may be possible that EMI actually improves content learning in which case we would have a win-win situation. However, our review starts from

the position that it should demonstrate some improvement in English language learning and, AT THE VERY LEAST, present no long-term cost to academic content learning. To our knowledge no systematic review has been conducted of EMI in HE that has assessed whether the evidence exists to shed light on these two products of EMI – language improvement and content learning. The only previous review we can compare ours to is Williams (2015), which documented research with particular (but not exclusive) reference to the South Korean context. Williams was not able to shed light on language improvement and content learning because of the different methodology adopted and we return to his paper in sections below.

A number of factors need to be examined by the research field in order to provide an in-depth understanding of EMI outcomes.

1. We need to establish whether content teachers have the necessary linguistic competence to teach through the medium of an L2 and whether there is a difference between general English proficiency and the competence to teach academic subjects through English.
2. We need to have an understanding of the level of English proficiency EMI students in HE need to start with, develop, or attain and what are the consequences of students being admitted to courses/lecture rooms with different levels of English proficiency, or different types of linguistic knowledge.
3. We need to find out whether differing levels of students' language proficiency lead to inequalities of opportunity particularly at transition points (e.g. from secondary to tertiary education) where a selection process based on a language test may present insuperable obstacles for perfectly capable content students (e.g. potential future engineers, geographers and medics).
4. We need to understand what kind of 'accommodation' needs to be made for EMI students, in comparison to first language medium of instruction (L1MOI) students, for example, in the content testing system whereby they are given (perhaps) more time to sit their exams and assessments or additional support to ensure their successful following of the course content. Might that additional support come from an English language specialist working more closely with the content teacher?
5. We need to arrive at some sort of a consensus about what kind of English will be/should be used in EMI HE. Again, this needs further unpacking: are we talking about a 'native speaker English' or other nativised varieties of English, or indeed of English as a lingua franca (ELF) (Jenkins 2014)? If it is ELF, then how does this affect international students from different geo-linguistic areas, including English-dominant ones? Furthermore, might the richness of the language be reduced when proficiency levels in English, on the part of both teachers and students, are not particularly high?
6. Will 'Englishisation' (Hultgren 2014) of education lead to undermining the status of the home language and particularly to 'domain loss' where a number of lexical items (e.g. technical vocabulary) will drift into disuse or perhaps never be coined at all in the L1?

By carrying out a systematic review, we may be able to ascertain the extent to which the research community has attempted to answer these questions. The answers, if they exist, should then be brought to the attention of stakeholders (teachers, students, institutional managers, and policy makers).

The reasons for the shift in MOI, as we have said, are multifarious and some commentators have conceptualised it as a major shift from English language teaching (ELT) in the way that

countries approach the teaching of the L2 (Shohamy 2012). As we will argue in response to the research evidence presented in this article, in the case of HE, and unlike CLIL in the secondary phase, EMI is much less motivated by a desire to trial a new approach in language teaching and more a university managerial decision to boost the prospects of the institution for the reasons already outlined (Naidoo 2006). Moreover, in the case of CLIL in the secondary phase there are varying degrees of government-imposed requirements which do not exist in the HE sector. It is for this reason that we deem it necessary to give special attention to EMI in HE whilst at the same time recognising that HE is inevitably linked with provision and practice in previous phases of education.

2. Method

2.1 Aims of the review

Our principal aim was to document, analyse and synthesise as much empirical literature on EMI in HE as our resources would allow. In addition, we aimed to try to situate research in EMI in HE in the broader context of learning content through L2 English, particularly research in the secondary education phase to see how the research in HE was developing in relation to another phase and context. As Shohamy (2012: 197) argues:

> the teaching of EMI at universities cannot be detached from broader settings where medium of instruction approaches are implemented [and] ... there are major lessons that can be learned from each of the settings that may have an impact on the others.

Whilst the scope of this article cannot incorporate reviewing other phases of education in depth, Section 3.1 provides a 'landscape overview' of the type of research carried out in other phases of education compared to the HE phase. In this way we hope that the HE review will be better contextualised. This contextualisation also throws up distinctions. As one of the anonymous reviewers of this paper pointed out, unlike most cases in earlier phases of education, EMI in tertiary education is sometimes not an alternative to L1MOI but is imposed by the very fact that student mobility necessitates the use of English as the only international language available to all the students in the class.

We began the process of this review with the following review questions:

1. How is English medium instruction in HE labelled and defined (if at all) in studies purporting to be researching it as a phenomenon?
2. What are the growth and development patterns of EMI across the world?
3. What are the beliefs of EMI teachers towards EMI?
4. What are the beliefs of EMI students towards EMI, including their motivation for enrolling on EMI programmes?
5. What is the evidence that English proficiency increases as a result of EMI?
6. What is the evidence for the effect on academic subjects of being taught through EMI?
7. What research on HE classroom discourse has been carried out that might shed additional light on the above questions?

2.2 The systematic review process

In a previous systematic review published in *Language Teaching* the authors (Macaro, Handley & Walter 2012: 3) identified 'five features that differentiate systematic reviewing from more traditional narrative reviewing'. We adopt and adapt these features for the current review (see Gough, Oliver & Thomas 2012 for further guidelines on systematic reviewing).

A systematic review:

1. Is always carried out by more than one reviewer
2. Uses transparent procedures, from conception to final conclusions. An initial protocol or agreement amongst the review team members specifies how the review is to be conducted
3. Includes studies through a process of exhaustive and reliable searching
4. Attempts to reduce reviewer bias as much as possible
5. Attempts to produce syntheses containing clear messages about the reliability of the evidence reviewed.

Moreover, in this review we included doctoral theses as this is a feature of systematic reviewing that often differentiates it from narrative reviews. Academic journals may eschew findings that do not demonstrate an effect (i.e. report the nil-hypothesis). Many of the doctoral studies we have examined in this review in fact (a) contextualise the research extremely well thanks to the greater space allowed and (b) describe research methods in greater detail. Moreover, examiners of doctoral theses provide, one hopes, equally good peer reviewing as some journal articles. Nevertheless, although access to doctoral theses has improved in recent years we acknowledge that some still do not figure in electronic searches.

We should note that our systematic review differed from that of Williams (2015) who analysed only a sample of retrieved publications and who adopted a type of content analysis approach to arrive at key themes which he then explored.

Because our review team included speakers of Chinese, we were able to locate via keyword search abstracts written only in Chinese, thus avoiding to a small extent the often cited bias towards only reviewing papers written in English. However, our team resources did not enable us to review the very large number of studies yielded. Instead, because of the space limitations of this article, we provide in Appendix 5 (see Supplementary Materials)* the 'Chinese Search Procedure' in the hope that (a) it will be of use to other Chinese-speaking researchers and (b) we may be able to review these articles in a separate paper.

2.3 Search strategy and review protocol

Three separate electronic searches were carried out, one for each level of education respectively: Pre-primary/Primary school level, Secondary school level, and Tertiary level. Given the interdisciplinary nature of EMI and the complexity surrounding its labelling and definition, we searched applied linguistics, psychology, and education databases: for education, BEI (*British Education Index*) and ERIC (*Education Resources Information Center*), for linguistics,

* Appendices are available online via https://doi.org/10.1017/S0261444817000350

LLBA (*Language and Linguistics Behavior Abstracts*) and MLA (*Modern Language Association*), and for psychology *PsycINFO*. In addition, *Web of Science* (Social Sciences Citation Index (SSCI) (1956–present); Conference Proceedings Citation Index – Social Science & Humanities (CPCI-SSH) (1990–present); Book Citation Index – Social Sciences & Humanities (BKCI-SSH) (2005–present) and *ProQuest Dissertations and Theses* (which included full texts from all around the world and abstracts of text from the UK and Ireland) were searched.

Different search strategies were tested (e.g. the use of the thesaurus) to ensure reliability and to yield the best results. The search strategies were refined by evaluating the abstracts retrieved and adding/deleting different search terms such as possible synonyms or other related terms. To increase reliability, selective manual searching was also carried out on six journals in which relevant papers might be published (volumes published between 2000 and November 2015): *AILA Review, Asian EFL Journal, Current Issues in Language Planning, International Journal of Applied Linguistics*, *International Journal of Bilingual Education and Bilingualism*, and *Studies in Higher Education*. Appendix 1 (see Supplementary Materials) identifies keyword search terms used at each level of education.

It should be noted that the search term 'immersion' was included because we were aware that some papers used the term even though they were not referring to an English majority language context such as Canada or Australia.

2.3.1 Inclusion/Exclusion criteria

We then identified from abstracts (and occasionally from reading the full article) the studies to be included in the 'all phases keyword map', according to the following combined criteria:

1. Research that reports on empirical data
2. Research in contexts in which the instructional language is (purported to be) English
3. Research in an instructional setting where the majority of the population's L1 is not English
4. Research where the population is studying at a pre-school, primary, secondary, or tertiary level
5. Empirical studies published in book chapters (but not duplicates with journal articles)
6. Unpublished doctoral theses and Centre or Government Reports
7. Research designated/entitled/described as CLIL or immersion (but nevertheless adhering to criterion 3).

Studies were excluded if they were:

1. Designated/entitled/described as content-based language teaching or content-based instruction unless they were EMI studies which had, by our definition, been misnamed as such. Further justification for this criterion is given below.
2. English for academic purposes (EAP) or English for specific purposes (ESP)
3. Carrying out only document analysis of policy research
4. Other systematic reviews, meta-analyses, or commentaries (unless for this article's Introduction and Discussion)
5. Masters dissertations as these are not sufficiently peer-reviewed.

The keyword search yielded 606 studies for possible inclusion. In conjunction with two experts external to the review team and through the application of the inclusion and exclusion criteria, we were able from the abstracts to reduce this number considerably thus yielding 285 studies for inclusion.

We applied an additional criterion: Research where the population is studying at tertiary level. We applied this criterion since including other phases of education would have taken us beyond the boundaries set by this journal. The application of this additional criterion and in-depth reading finally yielded a total of 83 empirical studies.

Regarding the studies in HE, quality assurance procedures were implemented by a linear process: decisions on key-wording ➔ title screening ➔ abstract reviewing ➔ full-text examination ➔ in-depth data extraction, as the systematic review protocol flow chart shows in Appendix 3 (see Supplementary Materials). For in-depth data extraction, two reviewers independently read each paper in depth and filled in a data extraction template (Appendix 4) (see Supplementary Materials). Both reviewers then compared the completed templates to resolve any differences found. Quality evaluations (high, medium, or low) were carried out regarding each study's contribution to the in-depth review questions (see 'Weight of Evidence' below). The inter-rater reliability on the data extraction and quality judgements was high, with only a 2% disagreement rate overall.

3. Findings

To get a better grasp of the scale of EMI research in HE we briefly contextualise it here by comparing it numerically and topic-wise with research in other phases of education. This contextualisation also goes some way to address Shohamy's plea (see page 4) not to consider EMI in universities as something separate from other phases of education.

3.1 Quantitative overview of EMI research in all phases of education

We now provide an overview of the geographical region of the studies and countries in which the studies took place (Table 1) and of the types of research designs used (Table 2). Asia and Europe dominate in all phases of education. Africa is particularly poorly represented at tertiary level as compared to secondary. However, we should note that our search strategy may not have located as many primary phase studies as we would have expected. We return to these geographical themes in our Discussion.

Regarding the five studies at the pre-primary school level, the topics explored were varied: whether a kindergarten English immersion programme leads learners to devalue their L1; how EMI programmes can help children develop socio-pragmatic awareness; how EMI programmes using stories can help children to develop skills in phonics and writing, and how environmental learning took place in an EMI Zoo-preschool.

Table 1 Distribution by geographical region and country of (n = 285) empirical studies (all education phases), as produced by the search strategy (extracted from abstracts)*

Education phase	Geographical region	Country
Pre-primary	Asia (4)	Taiwan (2), China (2)
	Not mentioned (1)	Not mentioned in the abstract (1)
	Total = 5	**Total = 5**
Primary	Africa (2)	South Africa (2)
	Asia (18)	China (8), Japan (3), Korea (2), Malaysia (2), Singapore (2), Pakistan (1)
	Europe (20)	Belgium (1) Czech Republic (1), Germany (4), Spain (6) Cyprus (1), Estonia (1), Finland (2), Greece (2), Italy (2)
	Middle East (1)	Qatar (1)
	Total = 41	**Total = 41**
Secondary	Africa (14)	Egypt (1), Libya (1), Nigeria (1), South Africa (8), Tanzania (1), Uganda (2)
	Asia (55)	Hong Kong (23), India (5), Indonesia (2), Japan (5), Mainland China (5), Malaysia (7), Pakistan (1), Philippines (1), Sri Lanka (2), Thailand (2)
	Europe (64)	Austria (4), Finland (6), Germany (9), Italy (4), The Netherlands (4), Poland (4), Spain (30), Sweden (1), Switzerland (1), Slovakia (1) Turkey (1)
	Middle East (2)	Middle East (1), Saudi Arabia (1)
	South America (3)	Argentina (1), Brazil (1), Paraguay (1)
	Total = 137	**Total = 137**
Tertiary	Africa (0)	
	Asia (40)	Bangladesh (3), Hong Kong (5), Malaysia (3), Mainland China (3), Japan (4), Pakistan (1), South Korea (9), Taiwan (3), Thailand (1), Turkey (7), Vietnam (1)
	Europe (52)	Austria (4) Denmark (6) France (2) Germany (2) Italy (6) The Netherlands (2) Norway (1) Spain (13) Sweden (5) Ukraine (1) Norway and Germany (1) multiple European countries (2)
	Middle East (9)	Israel (2), Oman (1), Qatar (1), Saudi Arabia (3), United Arab Emirates (2)
	South America (1)	Colombia (1)
	Total = 102	**Total = 102**

Note: This therefore means that for the in-depth review of HE a further 19 studies were excluded following their in-depth analysis.

Table 2 Distribution of (n = 285) empirical studies by research
design type (all education phases)

Education phase	Quantitative	Qualitative	Mixed	Total
Pre-primary	0	2	3	5
Primary	18	10	13	41
Secondary	27	49	61	137
Tertiary	28	33	41	102
Total	73	94	118	285

Note: Our map of all phases of education offers no obvious pattern
of design type.

At the primary level, based on the information available in the abstracts of the 41 studies, the research agendas were dominated by comparing immersion and non-immersion students' performance in English and L1, content learning and students' cognitive development. Tests were employed in most of these studies. Another prominent topic was exploring teachers', students' and parents' perceptions of and experience with EMI, mainly through questionnaires and interviews ($n = 8$). Other studies analysed classroom observations to explore how EMI classrooms provide opportunities for students' learning of English ($n = 3$) and content ($n = 1$), discursive practices in EMI classrooms ($n = 1$), codeswitching behaviours ($n = 1$), how multimedia can be used strategically ($n = 1$) and to compare EMI to EFL classes ($n = 1$). One study described an assessment tool for EMI classes, with another study presenting a successful example of an EMI teaching approach. Studies explored children's readiness for EMI education ($n = 1$) and the impact of EMI on students' motivation of learning English ($n = 1$) through questionnaires, the text genres in EMI textbooks through genre analysis ($n = 1$), the social impact of EMI ($n = 1$), and the link between EMI policies and children's sociocultural ecology ($n = 1$). The focus of one study was unclear from the abstract.

At secondary level, most studies explored the impact of EMI on students' English and content-subject achievements in EMI and non-EMI classrooms ($n = 11$). These studies involved measuring students' receptive and productive vocabulary ($n = 3$), reading comprehension ($n = 3$), and actual L1 and L2 language use ($n = 2$). A significant number of studies also explored teachers' and students' attitudes towards EMI and the development of teaching approaches for combining both content and language. These studies employed semi-structured interviews ($n = 25$), questionnaires ($n = 22$), classroom observations ($n = 20$), discourse analysis of lesson transcripts, students' writing, learning materials ($n = 20$) and document analysis ($n = 6$). Most studies were conducted between 1997 and 2015. Further details of the breakdown of studies for the tertiary phase are provided in the next section and we will return to our mapping of the other phases in our Discussion.

3.2 Quantitative overview of EMI research in HE

We now present a quantitative overview of the 83 HE studies that were reviewed in depth by the team (see Appendix 2 (Supplementary Materials) for the systematic map of EMI in HE).

Table 3 Distribution of empirical studies of EMI in HE

	Global	Europe	Asia	Middle East	South America
	1	Austria 3	Bangladesh 3	Israel 2	Colombia 1
		Denmark 5	China 2	Qatar 1	
		France 1	Hong Kong 5	Saudi Arabia 4	
		Holland 1	Japan 3	Sultanate of Oman 1	
		Italy 4	Korea 9	Turkey 8	
		The Netherlands 1	Malaysia 3	United Arab Emirates 1	
		Norway & Germany 1	Pakistan 1		
		Spain 11	Taiwan 3		
		Sweden 4	Thailand 1		
		Ukraine 1	Vietnam 1		
		Europe-wide 1			
Total	**1**	**33**	**31**	**17**	**1** **83**

Our analysis of year of publication shows that EMI is a relatively new but rapidly growing field of academic endeavour. The first study thrown up by the search strategy was a doctoral thesis from the Netherlands (Vinke 1995) perhaps reflecting the fact that Maastricht University in the Netherlands was one of the first institutions in Europe to extensively adopt EMI. Our search produced very few HE studies on EMI over the following ten years (only five studies from 1995 to 2005). Interest in EMI grew and academic output increased to 14 studies in a five-year period from 2006 to 2010. This was followed by a surge in academic research interest from 2011 to 2015. Sixty-three of the 83 studies were published in this five-year period of which 19 were published in 2014 alone.

The majority of studies ($n =73$) in the systematic review are journal articles. Four reports are included and four doctoral theses plus two studies reported in chapters in edited books. Investigations into EMI in HE were carried out in all geographical regions (see Table 3) with the exception of Africa. As well as one study which collected data at a global level (Dearden 2015) one at European level (Brenn-White & van Rest 2012) and one of both Norway and Germany (Hellekjaer 2010), the rest were at the single country level. In Europe the country most widely represented in the studies was Spain ($n = 11$ HE studies). In Asia, Korea was the country most represented. As well as Africa, we should note the relative absence of HE studies from South or Central America.

Of the 83 studies, 25 were classified by the review team as quantitative, 31 as qualitative and 27 as using mixed methods. There was a high proportion of investigations that we classified as 'case studies of one institution using mixed methods'. Of the 83 studies it was surprising to notice that 37 (5 quantitative, 19 qualitative, 13 mixed methods) did not have a clearly stated sample size, or at least did not provide enough information of the sample size. Of the studies that used quantitative methods we can categorise sampling patterns as follows:

12 studies had a sample size of less than 30; 8 studies had a sample size of 31–100; 6 studies had a sample size of 101–200, and 18 studies had more than 200 (student) participants, (e.g. Evans & Morrison 2011; Bolton & Kuteeva 2012; McMullen 2014; Lasagabaster & Doiz 2015).

3.3 Labelling and defining EMI in HE

We found that the labels given to the phenomenon of EMI and their definition are inconsistent and problematic. In 62 studies the label used was 'English medium instruction', with variations within that (English as *a* medium of instruction; English as *the* medium of instruction; English-medium education) with rarely an explanation of why such a label was being used. There were single cases of researchers using other terminology such as 'parallel-language education', 'English as a lingua franca', 'partial English medium', 'English content-based instruction', 'English medium and Spanish as a first language', and 'English taught programmes'. The term 'content and language integrated learning' was used in 12 of the 83 HE studies. However, in none of these was there a clear justification for using this term based on evidence that the teachers/lecturers were trying to 'integrate' content and language or that there was an institutional policy to do so. There were no uses of the label 'immersion' in the titles of the 83 studies.

In the introduction we gave our own definition of EMI. The effect of this definition is to make a distinction between the use of English as an L2 to teach content in countries such as Australia, Canada, the UK and the USA, where the majority population has English as their L1, and those countries where the majority population does not. This distinction may be open to challenge (see, for example, Met (1999) and more recently Fenton-Smith et al. (2017)) who in their edited volume include Australia as an EMI country on the basis that a substantial proportion of its HE population consists of international students whose L1 is not English. However, to support our own definition and exclusion criteria, we point to the clear difference in the environment immediately surrounding the two education settings/classrooms and the fact that international students have (presumably) chosen to study in Australia whereas, for example, Pakistani students in a state university in Pakistan may have no such choice available to them (see Mahboob 2017).

Clearly then both the definition of EMI in HE and its practice appear to be fluid. It is unclear as to whether this fluidity is happening at: a macro level, internationally as in CLIL and integrating content and language in higher education (ICLHE), in Europe nationally as appears to be the case in Taiwanese research (now appearing to adopt CLIL instead of EMI); or even the micro level, i.e. where a university may decide to start calling the programme on offer a CLIL or 'CLIL in HE' or ICLHE programme instead of EMI.

We should bear in mind that within HE institutions which purport to offer EMI programmes there is great variation of provision (see Hino 2017): are all programmes on offer EMI?; are they offered by some departments but not others (i.e. some sort of disciplinary distinction), if so on what basis?; are they only offered for what we might call 'less traditional, internationally oriented' subjects such as 'international business', 'international programme of frontier biotechnology'?; are they programmes taught partly in English and partly in L1?;

are they courses where the EMI offer is entirely dependent on the profile of the teacher in question (see Dearden & Macaro 2016)?

3.4 The growth of EMI in HE around the world

We have found only one study (Dearden 2015) which has attempted to map the growth of EMI on a global scale. This study, using British Council staff as informed participants, reported a rapid expansion of EMI provision in the 54 countries they represented. Respondents reported more EMI at tertiary level than at secondary level due to universities rapidly becoming more international and EMI was more prevalent in the private than in the public sector. Whilst, overall, the numbers of private universities almost equalled that of public universities, respondents estimated that 90% of private universities taught through EMI compared to 78.2% of public universities. Sixty-seven % of the respondents reported a likely future increase in EMI provision in their countries.

Focusing now on various geographical areas, we start with Europe as this is the area which has received the most systematic measurements of EMI HE growth.

3.4.1 Europe

Maiworm & Wächter's (2002) study was one of the first to systematically track the expansion of English-taught programmes (ETPs) in Europe, with two large-scale surveys of 1,558 higher education institutions (HEI) in 19 European countries. The number of HEIs that responded was 821 and only 725 ETPs were identified, representing between 2% and 4% of all programmes offered, highlighting EMI as a rare phenomenon. A follow-up survey in 2007 of 2,218 HEIs in 27 European countries identified 2,389 ETPs, a 229% increase (Wächter & Maiworm 2008). In both surveys ETP programmes were largely concentrated in the Netherlands and the Nordic countries. An interesting difference to note is that the second study excluded ETPs taught partly in English.

In 2012 Brenn-White & van Rest also tracked the growth of ETPs in Europe at Masters level drawing largely from the MastersPortal database. In 2002 the number of ETPs was 560; this more than doubled to 1,500 by 2008, rose again to 3,543 in July 2010 and rose again by 158 to 3,701 within 15 months (by October 2011). The complexity of how an ETP is defined is again evident; Brenn-White & van Rest note that within this same period of two years programmes taught through 'English and at least one other language' had increased by 963.

The most recent comprehensive map and analysis of the provision of ETPs in non-Anglophone countries in Europe was completed by Wächter & Maiworm in 2014. Again, a large-scale survey was conducted in 28 European countries, in 2,637 HEIs that held an 'ERASMUS Charter' in the academic year 2012/2013 (Wächter & Maiworm 2014). Results illustrated a clear increase from 2,389 ETPs in 2007 to a massive 8,089 ETPs in 2014, a 239% growth in ETPs over the last seven years. Once again, the Netherlands was found to be the leading country offering the highest number of ETPs at 1,078 programmes. This was

closely followed by Germany (1,030 programmes), then Sweden (882 programmes), France (499 programmes), and Denmark (494 programmes). However, Dimova, Hultgren & Jensen (2015) warn of a number of problems associated with estimating EMI growth in Europe. For example, they point out that master's programmes have grown in number anyway and that estimates of the EMI courses offered conceal a wide variety and complexity of linguistic practices.

3.4.2 The Middle East

The Middle East has also seen a sharp rise in the use of EMI in HE. The Kingdom of Saudi Arabia, where the official language is Arabic, is an interesting illustrative case. Suliman & Tadros (2011) state that the use of EMI is common in university-based nursing education programmes. Requiring Saudi nurses to train through English may be due to hospital policy. Whilst requiring all communication with patients to be done in Arabic, all written and oral communication between staff should be in English. This policy may be related to the general shortage of nurses in Saudi Arabia, which has led to an influx of foreign nurses (exceeding 80% of all nurses), hence the need to use English as a lingua franca at hospital administration level (Salton 2005). This growth in EMI has not only affected HE training in the healthcare industry, but across the entire span of HE in the country. The Saudi Ministry of Education identified English language proficiency as one of its key eleven goals (MOE 2013) and it is of note that most universities in Saudi Arabia use EMI (Jawhar 2012; McMullen 2014). A ripple effect of this has been the increase in intensive preparatory year English programmes. Having first started at King Fahd University of Petroleum and Minerals in 1964, 25 public and 27 private universities and colleges in Saudi Arabia now offer such programmes in response to the rapid growth of EMI in universities (MOE 2013).

Unlike the Kingdom of Saudi Arabia, the United Arab Emirates (UAE) has a long-standing tradition of using EMI in federally funded tertiary institutions. Policy documents of the Ministry of Higher Education and Scientific Research (MOHESR 2007) dating back to the 1970s stated that 'qualified faculty that meet international standards would be employed' and that 'instruction would be predominantly in English'. Since then, interest in educating Emirati students through the medium of English has surged. Weber (2011) notes that, through a strategy of moving from an oil-based to a knowledge-based economy within a nine-year period (between 2000 and 2009), American, Australian and British campuses almost doubled (from 140 to 260) in the Middle East. The approach taken to implementing EMI has been to hire native speakers of English from Anglophone countries in order to replace Arab teachers (Belhiah & Elhami 2014). In Abu Dhabi, thousands of native English-speaking teachers were hired to reinforce, in English, concepts that had already been learnt in Arabic (Rogier 2012). In a contrasting example, however, in 2012, the Supreme Education Council in Qatar announced that the medium of instruction of the most prominent HEI in the country, Qatar University, would revert back to Arabic. The notion that the expansion of English is a threat to the Arabic language and the religion of Islam has gained momentum since then (Belhiah & Elhami 2014). Examination of recent MOHESR documents (MOHESR 2016) reflects a

clear lack of an EMI narrative. In fact, the most recent documents and reports are no longer posted online in English but in Arabic.

3.4.3 Asia

Many countries in Asia and the Middle East have started using EMI in HE (Nunan 2003) with similar growth patterns to Europe (for a comprehensive study of HE in the Asia Pacific, see Fenton-Smith et al. 2017). In countries such as China and Japan, governments have been actively promoting the use of EMI in both private and public (state-funded) universities. In 2001 the Ministry of Education (MOE) in China stipulated as one of its 12 key guidelines that within three years, EMI should be used for 5–10% of undergraduate specialisation courses at top-tier universities (MOE 2001). In order to safeguard the implementation of this new policy, the MOE included the criterion of the number of EMI programmes offered by a HEI, as part of HE assessment (Hu & McKay 2012). Wu et al. (2010) conducted a survey of 135 HEIs across China. Findings showed that by 2006, 132 of these HEIs offered on average 44 EMI programmes per institution.

An even faster EMI growth rate has been witnessed in Japan over the past seven years. In 2009 the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) launched the 'Global 30 Project' whose main aim was to promote degree programmes offered through the medium of English in 30 Japanese universities, in order to attract 300,000 international students to study in Japan by 2020 (G30 2016). By May 2013, only 13 universities had implemented this policy and the number of international students had only reached 135,519 (Project Atlas 2016). MEXT then re-evaluated the project and re-launched it in 2014 under the name 'Top Global University Project' (TGU 2016). The new project is promoted as a 'funding scheme that aims to enhance the international compatibility and competitiveness of higher education in Japan' (TGU 2016). The aims of the project were broadened and funding was expanded to 37 universities across Japan. As part of this project, full/partial EMI degree programmes were launched across the nation. This, however, is only an account of formally introducing EMI in Japan. There are 86 national universities (universities established by the government but operated autonomously), 95 public universities (universities established, managed and funded by the government), and 597 private universities (universities neither funded nor operated by the government) in Japan. As of 2006, MEXT (2006) reported that 227 universities across Japan were offering one or more full credit-bearing academic subject courses through EMI.

In Taiwan, in 2000, a small number of elite public universities began offering business degrees through English. By 2002, a private university, Yuan Ze University, offered one quarter of its courses through English. Then by 2005, the prestigious National Taiwan University (NTU) had changed its regulations such that if any international students were taking courses, English had to be used as the MOI. This pushed course numbers offered through English at NTU up to 420 by the end of the academic year (Wu 2006). In the same year, the National Cheng Kung University (NCKU) offered 205 EMI courses. By 2013, EMI had grown to 29 Taiwanese universities offering 92 different full degree programmes through English. The striking difference between Taiwan and countries like China or Japan is that

Taiwanese universities appear to have initiated the implementation of EMI without having the policy imposed on them top-down by the Taiwanese MOE (Yang 2015).

Another example of the rapid growth of EMI is evident in Korea. Cho (2012) states that even though attempts were made from the mid-2000s to expand EMI programmes, it was not until 2006 that true expansion started to take root across the country when President Suh Nampyo, the then newly inaugurated president of the Korea Advanced Institute of Science and Technology (KAIST), announced his 'Globalization Project'. Suh's vision was to increase EMI programmes by 10% every year, until all classes at all levels (bachelor, masters, doctoral) were taught entirely through English by 2010. The number of EMI classes then rose steeply in Korean HEIs; of the 410,000 courses offered, 9,000 courses (approximately 2.2%) were offered through English (Byun et al. 2010). See also Kim (2017).

Not all Asian countries have experienced this growth and EMI is not without resistance. In Bangladesh, for example, Bangla has been the national language since 1972, is spoken by 98% of the population and used in public education, government administration and the judiciary. English, introduced during British colonial rule, is the major second language and has been used exclusively in the private sector of Bangladeshi HE since the early 1990s. It is still, however, not permitted as the MOI in public universities (Hamid & Jahan 2015). This situation reflects the diverse contexts that EMI is operating in: 'outer circle countries', such as Bangladesh, India and Nigeria, and 'expanding circle countries', such as China and Turkey (Kachru 1985).

We should again note that there is a relative absence of research in HE in Africa and Latin America and perhaps this mirrors a lack of groth of EMI in those geographical areas.

3.5 Implementation of EMI in HE

Given the rapid increase in the introduction and development of EMI programmes, it is not surprising to read, from a number of authors reviewed, references to the fact that the key actors in the process of teaching and learning through this new medium have rarely been consulted by policy makers at a national level or by university managers at the institutional level (Dearden & Macaro 2016). Nevertheless, it is surprising that in none of the studies which have centred on teacher and/or student beliefs do we read, THROUGH THE EMPIRICAL DATA ITSELF, of a process by which an institution has systematically engaged faculty, let alone students, in deciding how quickly and in what subjects to introduce EMI. We find some evidence of lack of consultation in Cho (2012), a Korean study where reference is made to the EMI policy being imposed: 52.9% of teacher respondents claimed that their motivation for teaching through English was because it had been 'enforced by the school'. Kang & Park (2005), in the same country, report that the main motivation for their student sample choosing an EMI course was that the subject they wanted to study was simply not offered in Korean. We have to bear in mind these factors of 'volition and ownership' as well as 'availability' when examining other motivations amongst these stakeholders. In Taiwan, additionally, motivation for enrolling on an EMI programme seemed to be associated more with the reputed expertise in the content subject of a particular lecturer rather than the MOI itself (Yeh 2014).

Numerous studies (Hamid, Jahan & Islam 2013; Başıbek et al. 2014; Kim, Tatar & Choi 2014) have cited the existence of English language only resources and/or lack of resources in the L1 of their country, as a reason to adopt EMI. This appears to be the case particularly in technology and science. Indeed some student respondents also cited the need to match the language of exams with the language of the resources (Belhiah & Elhami 2014). In the Saudi context, 45% of Al-Masheikhi, Al-Mahrooqi & Denman's (2014) respondents linked the English language with the language of science and technology and therefore considered it important to learn science through EMI (although 30% disagreed).

3.6 Teacher and student beliefs about EMI

Despite the above mentioned negative aspects of EMI implementation, in many studies, more positive motivations for implementing EMI can be found. The cultural, as well as the financial benefits of internationalisation of HE, by attracting more international students, feature prominently in a number of studies asking teachers and students the motivation-type question. Many of Jensen & Thøgersen's (2011) Danish lecturers believed that the number of EMI courses should be increased in order to attract non-Danish students. The key motivator for teaching and learning through EMI was that English as an international language was an essential constituent of the internationalisation process. The majority of student respondents in Khan's (2013) study in Pakistan held the belief that EMI was essential in HE and that this in turn could contribute to modernisation and a progressive national outlook. In Germany, Earls (2016) showed that both lecturers and students were convinced that, in the context of globalisation of goods and services, it was inevitable that EMI would be the status quo and that, at least for some subjects such as International Accounting, it would not 'make sense teaching it in German' (p. 108), a view similarly held by business school lecturers in Korea (Byun et al. 2010). All 15 of Bozdoğan & Karlıdağ's (2013) Turkish student interviewees believed there were instrumental advantages in studying through English (improving English, leading to job opportunities) and in Chapple's (2015) study of Japanese students' reasons for enrolling on EMI programmes, 'improving English ability' (p. 4) was cited much more frequently as a reason for enrolment than it being an institutional requirement.

Despite concerns (outlined below), two further studies report positive attitudes to EMI: In Bangladesh, Hamid et al.'s (2013) lecturers in a private university believed that English was essential for communicating with different people across the world. In Qatar, Ellili-Cherif & Alkhateeb's (2015) students expressed the view that English had a higher status than Arabic and therefore it was needed to improve their career prospects.

In China, Hu, Li & Lei (2014) compared institutional policy documents and the beliefs of lecturers and found convergence of motivational factors for increasing EMI provision. Because of the high value and prestige accorded to the English language, lecturers believed that EMI was capable of ushering in benefits both at the institutional and national level such as social mobility and career prospects. Less convergence between policy makers and faculty was found in Ali's (2013) study of a Malaysian university where lecturers did not share the same understanding of the meaning of internationalisation but rather held what the author calls 'a silent understanding' of it.

Positive motivations were found in Dearden & Macaro's (2016) study of lecturers in Austria, Italy and Poland where the desire to give students the same opportunities of studying abroad as they had had was frequently cited as being an advantage of EMI. In Earls' (2016) study there were lecturer motivations which went even beyond instrumentality or the necessity of knowing English, but rather oriented towards intercultural understanding, learning from different cultures and 'mental flexibility' (p. 124) with regard to teaching and learning. In Gao's (2008) longitudinal study, mainland Chinese students studying in Hong Kong shifted their motivation from extrinsic, context-mediated orientations towards more self-determined and intrinsic ones.

Virtually no studies in our review have asked an outright 'for or against EMI in your country' question to lecturers or students. A possible exception would be that of Başıbek et al. (2014) who asked 63 Turkish lecturers whether they supported adopting EMI at their institution and obtained a generally affirmative answer. However, both sample size and lack of generalisability to a population of (say) all lecturers in Turkey, could not lead one to infer overall support for EMI from this result and therefore be able to inform policy makers. In Turkey, researchers also found that students claim they would learn content more easily through the L1 than through English (Kirkgöz 2014; West et al. 2015) but that, once again, does not provide a definitive answer as to whether EMI should be increased, kept at current levels, or reduced.

Despite these propelling forces towards EMI (expressed as constraints or affordances), a number of deep concerns have been expressed by lecturers and students and in virtually all studies consulted. Probably, and unsurprisingly, the concern most often expressed is that of student English language proficiency, lecturer proficiency, or both. We should pause briefly here to note a lack of definition or specification regarding the construct of proficiency which in any case is referred to in various ways by different authors and even within-study. For example, Ghorbani & Alavi (2014) refer to 'English skills', Huang (2015) refers to 'English ability', Islam (2013) to 'English proficiency', Francomacaro (2011) to 'language competence', and so on. This variety of terminology and lack of specification is not a trivial observation on our part if we consider it in reference to the seminal model proposed by Cummins (1979) where a distinction is made between academic and non-academic language. In the context of international students in Anglophone countries which often impose language requirements there is still a debate about whether general English proficiency (as measured even by a test such as IELTS which contains some academic language) and/or academic language proficiency (as provided by a general EAP programme) are sufficient. We propose that the issue is even more in need of debate in the context of EMI. In this paper we will stick to the term 'proficiency' whilst acknowledging that it is only being used in a general sense to describe participant beliefs as reported in studies consulted.

Putting aside the question of lack of specificity with regard to proficiency, we find lecturers deeply concerned about their students' inability to survive, or better still thrive, when taught through English. This is contrary to what European 'programme directors' in Wächter & Maiworm's (2014) comprehensive study claimed was the case. In Turkey, the collective research picture is one of deep concern in terms of level of English in general and vocabulary knowledge in particular (Kirkgöz 2009; Başıbek et al. 2014; Macaro, Akincioglu & Dearden 2016).This is matched by student evaluations of their own English proficiency (Bozdoğan &

Karlıdağ 2013) as being insufficient to enable adequate learning of content. In Spain (Doiz, Lasagabaster & Sierra 2011) and in France (Napoli & Sourisseau 2013) we find evidence that lecturers not only see student proficiency as inadequate but even as a possible barrier to being able to access an EMI programme. In the UAE, Rogier's (2012) respondents claimed that students were weak in the skills of listening (presumably to lectures) and in academic writing.

Amongst Borg's (2016) sample of lecturers in Iraqi Kurdistan, as many as three quarters believed their students' proficiency was barely above elementary level. In Korea, Choi's (2013) lecturers considered students' English proficiency levels to be the single greatest barrier to effective content learning and Kim & Shin's (2014) sample considered that nearly a third were ill-equipped linguistically to benefit from an EMI programme. Lecturer beliefs about student's linguistic deficiencies also exist in countries such as Sweden (Airey 2011) where EMI is established and there is a widespread belief that everyone speaks English well.

Students' perceptions of their own linguistic abilities seem to concur with those of their lecturers. In Thailand, Hengsadeekul, Koul & Kaewkuekool (2014) found a negative correlation between instrumental motivation and speaking anxiety, fear of negative evaluation, and fear of social comparison suggesting that only confident English speakers were sufficiently motivated. Notable exceptions are in Taiwan (Yeh 2014) and Hong Kong (Evans & Morrison 2011). In Taiwan, students expressed confidence, possibly due to teaching strategies adopted by the lecturers in this specific institutional context rather than proficiency. In Hong Kong, despite early (undergraduate) student feelings of inadequacy, especially in productive skills, the authors report that students generally overcame their difficulties as their course progressed.

Overwhelmingly though, students report insufficient levels of proficiency (Cho 2012; Khan 2013; Ellili-Cherif & Alkhateeb 2015). Cho's (2012) Korean students complained of very limited listening skills with some claiming to understand only 60% of their lectures. Ellili-Cherif & Alkhateeb's (2015) Qatari students, even in 'internationally oriented subjects' (e.g. Business Studies) believed they were learning considerably less well than if they had been studying through Arabic. Khan's (2013) Pakistani students had problems understanding both lectures and written materials and were very hesitant to speak in English.

Similar findings are reported by Bangladeshi students (Islam 2013). Kang & Park's (2005) large-scale Korean study ($n = 366$) of students with different proficiency levels shows quite clearly, through inferential statistics, that the level of proficiency in English impacts on students' ability to understand lectures and whether or not they needed to resort to content materials in translation. In this study, low proficiency was also linked to higher levels of anxiety.

Sultana (2014) found that first-year Bangladeshi students from public Bangla-medium schools faced more problems than students from private EMI schools when they entered English medium universities. With little or no English, students from public schools were at a disadvantage academically and socially and their lack of English language proficiency in EMI universities negatively affected their socialisation on campus, self-image, identity and chances of learning. They also felt that they were not noticed by teachers, and found it difficult to participate in any discussion or debates in English or to interact with English-speaking students. Thus English played a significant role in marginalising the students who did not have adequate competence in English.

Having considered the beliefs about students' English proficiency, we now turn to evidence as to whether lecturers believe they have the necessary language requirements themselves to teach through English and then whether students share this belief about their teachers. Here the picture is less clearly discernible for a number of reasons. First, there is less homogeneity amongst lecturers in terms of age groups than there is with students. Jensen & Thøgerson's large study ($n = 1131$) of Danish lecturers suggested that younger faculty are more confident with their level of English. However, even within this type of finding may lurk confounding variables such as willingness to adopt more interactive methodologies, leading to better student understanding, leading to lecturers therefore feeling that their English is sufficient for the task.

There is no HE research, to our knowledge, that matches some kind of language proficiency test with actual practice in order to determine a minimum level needed to teach. Apart from a relatively superficial evaluation of teachers' linguistic competence to teach EMI (e.g. Kling & Stæhr 2012), there is no definitive benchmark for the level a teacher needs to be able to teach through English at the national level and certainly not at the international level. The Dearden & Macaro (2016) study showed that none of the interviewed lecturers from Austria, Italy or Poland had a clear idea of what an appropriate level might be and that some believed the selection was made based on whether they had a doctorate from an Anglophone country, had taught abroad or were just considered by managers to speak English well. The meaning of 'ability to teach', without careful specification, can also mean different things to different people. Dearden's (2015) survey showed that 83% of 'informed observers' in 54 countries thought there were not enough qualified teachers in their country even though the term 'qualified' was left undefined so that it could be interpreted purely in language terms, or in terms of certification. Lastly, it is clear from a number of research sources that teachers in different academic subjects consider their subject to be more or less dependent on language (see Lo 2014 for evidence of this at the secondary level). For example, Turkish lecturers in Physics considered the language needed to put across the subject to be quite minimal (Macaro et al. 2016), and Dearden & Macaro (2016) cite one lecturer believing that in mathematics one is 'saved by the formulae' meaning that little or no language is needed beyond the mathematical code itself. Nevertheless, despite the lack of benchmarking of teacher proficiency, it is clear that the vast majority of respondents do consider that a high level of English is required (Choi 2013).

Leaving aside complications regarding lecturer (self-assessed) proficiency, more studies reported lecturers as identifying that they had linguistic problems than those that did not. For example, Italian university lecturers expressed a belief that their English was inadequate, and that students would find it difficult to understand them, leading to possible incorrect language learning on the part of the students (Pulcini & Campagna 2015; Campagna 2016). Also in Italy, at least ten out of 53 participants in Guarda & Helm's (2016) study considered their own language skills as one of the major sources of difficulty in teaching on EMI programmes. Less concern was expressed by Italian Engineering lecturers who all reported feeling quite confident with their English and did not consider they faced problems interacting with students, or evaluating students' progress (Francomacaro 2011). However, Francomacaro (2011) does provide a telling comment that: 'The discussion revealed how the discipline lecturers are unaware of the linguistic implications of their teaching and of their students' (p. 67).

Considerable concerns have been expressed by lecturers in Iraqi Kurdistan (Borg 2016), in Vietnam (Vu & Burns 2014) and in Denmark (Werther et al. 2014). However, conflating such disparate educational settings should be done with caution. It may well be that the level of English causing concern to Danish lecturers was more to do with not 'being able to speak off-the-cuff ... and playing with the language' (Werther et al., p. 455) than not having the vocabulary and grammatical structures to provide even adequate content explanations, as can be inferred from other studies.

We should also give voice to students' opinions of their lecturers. An interesting divergence of beliefs was found in a Swedish study by Bolton & Kuteeva (2012) where only a minority of teachers considered they had language problems whereas a sizeable proportion of students were less enthusiastic about their teachers' level of English.

Concerns, if not negative attitudes, towards EMI are not confined to beliefs about insufficient levels of English proficiency although some are indirectly linked to this aspect. Nearly all studies of teacher beliefs allude to the extra work involved in teaching through English and the generally laborious nature of EMI (Hellekjaer 2010; Başıbek et al. 2014) which could be interpreted to include language proficiency but also the question of redesigning and if necessary reconceptualising lectures and material that lecturers use in their L1. Vinke (1995) found that agricultural science and economics lecturers believed that EMI entailed a reduced number of different types of pedagogical tasks or activities that could be offered to the students and Airey's (2011) Swedish lecturers alluded to the inability to introduce humour and provide the local context through EMI especially, one assumes, when the students come from different cultural backgrounds. Taking the notion of local context one step further, Kilickaya's (2006) study of 100 Turkish lecturers found that participants demonstrated a fear of the negative impact of EMI on the Turkish language and culture and, indeed, wished the government to be more forceful in ensuring that L1 education was protected.

Again we should treat this amalgamation of findings from different geographical settings with some caution because at the secondary level of interpretation comparisons are difficult without greater insider knowledge that could be achieved through primary comparison studies.

3.7 Variables in stakeholder beliefs

One final area concerning stakeholder beliefs is connected with all the possible variables in the field of EMI in HE. We would argue that, because of the broad sweep of the loci of research, several variables need to be researched before attempting any kind of overall conclusion of where the EMI phenomenon is going: These might be the different:

- Beliefs held by female and male students as both L2 learning and certain academic subjects tend to be gendered
- Beliefs held by those in different academic disciplines
- Attitudes held by students (and lecturers) in private and state universities
- Motivations for enrolling on undergraduate or postgraduate courses

• Beliefs expressed by international and home students in EMI programmes and, possibly, in relation to different levels of L2 proficiency.

Although few studies set out to explore these variables directly, the tendency for investigations into students' beliefs having, not surprisingly, larger samples, does allow for some evidence of variability into these student-types. In terms of gender differences, McMullen (2014) found no significant differences with regard to whether the Saudi students in his sample thought a preparatory year was necessary before embarking on EMI. However, females were less likely to believe that they needed the 20 hours of English that were being required compared to males suggesting a possible greater confidence with their current proficiency level (although no inferential statistics appear to have been carried out). Hengsadeekul, Koul & Kaewkuekool (2014) in Thailand did carry out inferential statistics and were able to demonstrate that females had significantly higher goals that could be described as instrumental but no differences in terms of self-estimated proficiency.

With regard to different programme levels, postgraduate students in Sweden (Bolton & Kuteeva 2012) reported higher levels of confidence and satisfaction to learn through EMI than undergraduate students. Humanities students appeared to be less favourable to a current or putatively increased level of EMI provision compared to science students (although there were also high levels of 'neutral' students). Finally, with regard to the home and international students' variation, Kim et al. (2014) found that international students believed their level of English was adequate whereas Korean (home) students perceived their level of English to negatively affect their understanding of content (Bartram 2008). Chapple (2015) found that the Japanese (home) students in his sample struggled quite considerably with EMI whereas at least some of the international students felt their time was being wasted to accommodate the relatively low proficiency of the Japanese students.

3.8 Professional development of EMI teachers

Another concern expressed by lecturers is the lack of preparation to teach, and lack of professional development opportunities. We have already discussed the absence of a benchmark of teacher English proficiency in HE. However, and in relation to the phrase 'ability to teach through English', there is also virtually no research data available on types of teacher preparation programmes in EMI in HE. As far as we are aware they simply do not exist, and even in an educational setting such as Hong Kong where at tertiary level English has been the language of instruction for generations, there are no pre-service teacher programmes required or even optionally on offer for HE lecturers. Some studies reporting in-service training have been carried out but we have no notion of the level of take up or the overall success of programmes in any country or jurisdiction. Given that it is generally recognised from secondary education EMI/CLIL studies (Hoare 2003) that teaching subject content is not just a simple matter of translating what one was going to say or present visually into English, this research gap can only be due to two factors: either the pre-service programmes do not exist or researchers have not been interested in exploring them; we tend to the former. According to Wächter & Maiworm's (2014) European overview, faculty

are 'encouraged' to improve their level of English: even this is not mandatory. They do not provide evidence that EMI teachers undertake development in methodology, whether optional or required.

In Sweden, Airey (2011) investigated a professional development course in EMI involving 18 teachers from various disciplines with limited or no experience of EMI. We should note that one of the reported reasons for opting-in to the course was a belief it might contribute to getting a promotion. Some of these participants divulged that they had suddenly been asked to switch to EMI without sufficient time to prepare. In Spain, Aguilar & Rodríguez (2012) report the provision of some limited development in the form of an EMI (CLIL) taster course lasting 15 weeks. The authors report that the main motivation for taking part was the lecturers' desire to up-skill in English language rather than consider changing methodology. In Italy, Guarda & Helm (2016) report on a seemingly successful development programme which involved over 50 lecturers in presenting lectures, and seminars followed by group discussions. Pre- and post-analysis of views expressed by participants shows some promising change of perceptions and greater willingness to interact with students in English, as well as to consider student needs.

3.9 Impact of EMI on English language learning

We now turn to research on the impact of EMI courses on English language proficiency in HE. The crucial research question is, 'what is the impact on learning of this dramatic change from L1 medium of instruction to EMI?' As Jiménez-Muñoz (2014: 30) argues with regard to impact: 'until conclusive proof is found, the controversy over the usefulness of CLIL and EMI to promote excellence in both content and language learning will continue'. We will first consider the evidence of impact on (English) language learning.

From our total of 83 HE studies that we have included in the systematic map, only seven have in some way measured the impact, via objective language tests, that EMI programmes have had on English language learning or English language proficiency. Of these, five have used national or international standardised testing instruments (Lin & Morrison 2010; Rogier 2012; Hu & Lei 2014; Aguilar & Muñoz 2014; Yang 2015); and two have used instruments created by the researchers specifically for the purposes of their study (e.g. Pessoa, Miller & Kaufer 2014). This paucity of language impact studies, coupled with the variability in test instrument types makes any kind of overview assessment of impact extremely difficult. Moreover, there is variability even within the test-types with some testing potential improvement in single skills, others testing more general abilities.

There is also the issue of what kind of language test is most appropriate for measuring the impact of EMI on language learning: should it be 'general' or 'academic English' improvement? This is especially tricky when the study design involves a comparison of EMI and non-EMI classes where students have been taught in the L1 but may have followed contemporaneous EFL classes. The problem here is one of comparing like with like: the expectation might be that EMI students improve their academic English more than non-EMI students and that the latter might improve their general English more than the former. Potentially, therefore, one might be looking for research studies which tested both types

of English when such comparisons were being made. In other words there is a potential difference between general English proficiency and the competence to learn effectively in an EMI context. This also relates to the broader question of whether EMI programmes are intended or indeed should be intended as language proficiency development programmes.

The studies described in this section did not provide, in our view, sufficient theoretical discussion of what type of English language proficiency or competence EMI programmes might be expected to develop and, as a corollary, the kind of language testing instrument that would be appropriate when a comparison was being made between EMI and non-EMI students' progress.

A study measuring general English proficiency and using standardized English tests (IELTS) was carried out by Rogier (2012). Set in the context of one university in the UAE, she specifically set out to measure longitudinally the extent to which students' English language skills improved after studying via EMI in a four-year undergraduate programme. We should note that at this institution students were expected to have IELTS 5.0 before starting the course and this resulted in only 10% of students being pre-selected for EMI courses. They were also expected to reach 5.5 IELTS after two years and to graduate with at least 6.0. Rogier found that there was a statistically significant score gain in all four of the English-language skill areas (writing, reading, listening and speaking). Students' largest gains were in the areas of speaking where, on average, they made half a band gain, followed by reading where they made nearly that level of gain. Although Rogier did not have a non-EMI comparison group she does compare these gains with studies of General English programmes elsewhere (e.g. Elder & O'Loughlin 2003) which have shown that, to move up one half of a level, students need between 200 and 240 hours of general English tuition (or, say, eight weeks on a fairly intensive course). Thus, if the comparison is valid, to move up on average only one half band score in four years would not seem to be a great validation of the beneficial effect on English in this particular institution.

Also measuring four skills, but this time with a national General English Proficiency test, was a study carried out by Yang (2015) in Taiwan. Results showed that students, after two years of EMI instruction, had made significant improvements in their receptive skills. Again, there was no comparison group within the institution but Yang compares them favourably to national level measurements from non-EMI universities. However, the EMI students were already scoring higher than the non-EMI students at baseline and most had previously been studying Tourism through English in their vocational high schools; it is not possible to ascertain the high school medium of the non-EMI students. The EMI sample size was also quite small ($n = 29$) compared to the national sample and the significant improvement was only noted in listening comprehension, which would seem to be an expected consequence of lectures delivered in English. Lastly, we are not told whether the EMI students had access to additional EFL courses.

In contrast, a study with a direct comparison group was carried out by Hu et al. (2014) in China. The researchers used two national tests: the National Matriculation English Test (NMET) and the College English Test (CET). Findings are somewhat inconclusive because the EMI students scored no better than the Chinese MOI students on the NMET but significantly better on the CET. However, even on the latter they did not score better than the CMI students once the pre-test differences were partialled out.

We now turn to studies which have directly sought to measure specific skills or areas of language competence. The first of these, Aguilar & Muñoz (2014), was carried out in Spain examining the impact of EMI on postgraduate Engineering students' listening proficiency and grammatical knowledge using the Oxford Placement Test (OPT). The results show students improved in listening skills but not in grammar after a semester (60 teaching hours). Students that gained significantly more in listening and grammar were those with the lowest initial level of proficiency (elementary level, OPT band 3). This suggested that they benefited more from EMI instruction. The higher proficiency students actually performed worse in the grammar post-test than they did in the pre-test. We may note that: there was no comparison group so the significant gains were within-group only; the sample underwent very high levels of attrition (205 initial participants was reduced to 63), which may have affected the result.

In Taiwan, a study by Tai (2015) sought to assess the progress over one semester made in writing accuracy, complexity and fluency. The participants appear to be linguistics students who had elected to take the course. Findings suggest that there was a significant improvement in fluency with large effect sizes but no significant improvement for complexity and accuracy, perhaps reflecting the focus of the programme regarding writing.

Although strictly speaking a study about the impact of EMI in secondary schools, the study by Lin & Morrison (2010) in Hong Kong is included here because it is relevant in terms of the transition to tertiary education. To examine the vocabulary size of first-year undergraduate students who had been instructed via EMI or Chinese MOI at secondary schools, 762 first-year undergraduate students were administered two tests on passive and active vocabulary. Of these students, 413 students' essays were analysed to examine the lexical richness and the lexical appropriateness. The results show that only a very small number of EMI students (about 5%) lacked a satisfactory level of receptive academic vocabulary, compared to almost 40% of the L1MOI students. This suggests that Chinese MOI was not preparing students well for their (compulsory) EMI tertiary education. In the productive vocabulary test, only a small percentage of EMI students (23.9%) and an even smaller number of L1MOI students (1.5%) could produce a satisfactory level of academic vocabulary. However, due to their larger academic vocabulary knowledge, EMI students produced better quality essays than the L1MOI students.

Another example of a transition study is Pessoa et al.'s (2014) four-year longitudinal study. This study examined the challenges that multilingual high school students face when transitioning into college. The authors recorded the development of Qatari students' literacy skills at an EMI university. They analysed samples of writing of 86 students on two academic English courses, representing a total of 7 texts from each student, over a two-semester period (602 texts in total). Results indicated that students had clear difficulties with reading comprehension. This was due to a lack of background knowledge, inadequate vocabulary knowledge and a dearth of reading stamina. Students also had difficulty with English academic writing. Nevertheless, once students had been taught strategies to apply to their writing, they understood better the expectations of academic writing, and their writing appeared to improve.

The above mentioned studies are the only HE studies which used objective tests to measure the impact of EMI on English language learning or English proficiency. A cluster of others

have measured it via students' self-assessment of their progress in English but these findings are usually embedded in much wider investigations of student beliefs. In Korea, Byun et al.'s (2010) students generally believed EMI had led to an improvement in their English proficiency. In Taiwan, in Yeh's (2014) study, 75% of students claimed via self-assessment that EMI had a positive influence on their English and in particular their listening comprehension. In contrast, Bozdoğan & Karlıdağ (2013) report that all students (self-assessed) felt they had made no progress or even regressed in their productive skills. No explanation can be arrived at for these different self-assessed findings. Bozdoğan & Karlıdağ propose that their results may have been due to very low levels of participation in class, but there is no evidence that there was high participation in either the Korean or the Taiwanese study. Once again this demonstrates a need for comparative studies which drill down into reasons for findings within each context.

3.10 Impact of EMI on content comprehension and learning

A relatively smaller number of studies (Vinke 1995; Hellekjaer 2010; Joe & Lee 2013; Dafouz, Camacho & Urquia 2014) have measured students' comprehension of lectures, and although their design and measurement instruments vary considerably we will nonetheless compare them here.

Vinke's (1995) Ph.D. research in the Netherlands consisted of three separate studies of which one used an experimental design to compare the content understanding and learning of second-year students, from various majors in EMI and non-EMI classes taught by the same lecturer. For one lesson an experimental group of 50 students were taught through English and a control group of 50 students were taught through Dutch. The topic of the lecture was new to both groups, as checked via a questionnaire prior to the lecture. English proficiency differences of the two groups were taken into account in the analysis in order for it not to be a confounding variable. Whether these students could represent the average level of their peers was also checked based on their grades in English, Dutch, Maths and Physics. The EMI and non-EMI lessons were both video-taped thus ensuring fidelity to condition. In the post-test the students in the L1MOI group performed significantly better than the EMI group in terms of lecture comprehension.

Hellekjaer's (2010) study adopted students' self-reported questionnaires to compare EMI students' overall listening comprehension level of their EMI lectures and L1MOI lectures. The sample ($n = 411$) consisted of 364 Norwegian undergraduate and postgraduate students majoring in Business and Engineering from one university in Norway and 47 German graduate students from two universities in Germany. The findings suggest that the students' listening comprehension of EMI lectures were lower than the L1MOI lectures, (based on descriptive statistics only – i.e. with no inferential statistical tests run). The main difficulty seemed to be unfamiliar and unintelligible words and expressions. By contrast, Joe & Lee's (2013) study in Korea found no obvious differences in lecture comprehension between EMI and L1MOI students. Although in Dafouz et al.'s (2014) study students' self-reported comprehension of lectures was lower in EMI classes than in non-EMI classes, the researchers found no obvious differences when it came to the

two groups of students' official grades. So how might we account for these different findings?

Joe & Lee's (2013) study in Korea compared a group of 61 first- and second-year medical students' learning of content knowledge through English and Korean in three lectures. The first half of each lecture was delivered in English and the second half in Korean, all taught by one Korean professor. However, unlike Vinke (1995) the content of the two halves of the lectures was different. A pre-test in Korean was administered before each lecture to test students' existing knowledge of the content of that lecture. A post-test was conducted in English for the EMI half of the lecture and in Korean for the Korean MOI half. In this study, the students' English proficiency level was clearly specified with a mean score of 590.38 from PB (paper-based) TOEFL, which was considered high by the author. However, this finding should be interpreted with caution as there may be several confounding variables. First, there was no information given regarding fidelity to condition as it was unknown how much English was actually used in the EMI half of the lecture. Second, the pre-test was only in Korean, which means the students' previous knowledge in English was not tested. Lastly, it was unclear whether the content difficulty levels of the EMI and non-EMI parts of the lectures were matched to ensure the MOI was the only independent variable.

Dafouz et al.'s (2014) study, located in Spain, compared EMI and non-EMI students' official grades, including 106 students in Accounting, 115 students in Finance and 95 students in History from one university, also using a self-reported questionnaire. However, insufficient information is available about the design of the EMI and non-EMI tests and how much English was used in the EMI classes was not controlled for (or at least not reported).

Moving on from lecture comprehension, we should note a study which examined the issue of the impact of using English in written exams (Tatzl & Messnarz 2013). Two exams with questions about Physics were administered to two groups of Engineering major students from four year groups at one institute in Austria. The results show no significant difference on students' scores in the test in German and in English. As the author argued, this implied that in written EMI exams for Engineering undergraduate students there may not be a need for extra time allocated because of English. However, looking at the research design, we may question this conclusion. For example, there was no pre-test to ensure the students in the two groups had equivalent understanding in Physics, nor any explicit information to show the two groups had a similar starting point. In addition, the students' low score on the test, which was due to the lack of preparation as claimed by the researcher, is in contradiction with the fact that the test was deliberately designed in a way that was easy for the students.

These are the only HE studies which have used some kind of objective measure to examine the relationship between studying a subject through the medium of English and achievement in content. Again a handful of studies embed self-assessed performance. For example, Kang & Park (2005), in a Korean university, found a correlation between students' self-assessed English and their performance on EMI courses. Kim et al. (2014), also in Korea, found correlations between self-assessed language competence and confidence with academic subject learning. These findings are not surprising.

3.11 Focus on pedagogical strategies in the EMI classroom

Studies of interaction in EMI in HE, as retrieved by our systematic search, are relatively rare when compared to studies of classroom discourse and interaction in the secondary education phase (e.g. Dalton-Puffer 2007).

Two features of lecturer discourse were investigated by Dafouz, Núñez & Sancho (2007), in particular the use of the pronoun 'we' and in relation to modal verbs. Three lecturers with Spanish L1 were recorded teaching a group of Aeronautics Engineering students through the medium of English on a summer school in Spain. As these students were drawn from 14 different nationalities and had just come together for a relatively short course this makes the EMI setting somewhat special and even more so given that the authors describe it as a 'CLIL University Context' in their title, although there is no evidence provided that the three lecturers were aware of CLIL pedagogical approaches. The findings show that the use of 'we' was used as a device to create solidarity with the audience: '**We** will see later'; 'here **we** have'... '**we** tried to solve yesterday' (p. 655). These were often collocated with the modal 'can': 'we **can** calculate'. The authors propose that the heavy presence of these discourse features 'open up a space for negotiation' (p. 659) not normally present in the lecture situation. The paper does not report whether the lecturers themselves were aware of using these features frequently for the benefit of the students nor whether the students believed they benefited – something that future research of this kind in an EMI setting might usefully consider.

Operating in the Saudi context, but this time with smaller classes, Jawhar (2012) explored the extent to which classroom interaction is conducive to both content and language learning. The corpus consisted of teachers and students in an all-female institute studying Physics, Chemistry, and Early Child Education. Sixteen hours of EMI classes were recorded. The key finding was that teachers and students used an albeit limited number of linguistic devices (for example, the researcher focused on the use of 'yes' both as an acknowledgement of an assertion and as a backchannel by participants to encourage the speaker to continue) to facilitate the interaction in which the understanding of content was a key aim. Nonetheless, Jawhar wonders if, despite the presence of these features, it is enough to label even these small classrooms ones where language and content are being integrated. It should be noted that both Dafouz, Núñez & Sancho (2007) and Jawhar (2012) label their classroom settings as 'CLIL'. However, the latter researcher is at pains to point out that – in the Saudi HE context – CLIL is not a term that everyone is aware of, let alone understands (p. 2).

Does the speed of delivery change because of switching to EMI from L1MOI? This was part of the topic of a study carried out by Thøgersen & Airey (2011). Using 'syllables per second' and 'mean length of run' (the average number of syllables between pauses) they found that one lecturer's delivery did indeed slow down when he taught the lesson in English as opposed to Danish (L1). The researchers controlled for lesson topic and other factors. However, when later asked about his speech, the lecturer denied intentionally reducing the speech rate or even noticing that his speech rate had decreased. As he is described as 'a highly experienced lecturer who teaches in English daily' (p. 210), one can only assume that he was subconsciously accommodating for the learners' lower command of the L2. However, the researchers also analysed his rhetorical style and found that in L2 (EMI) he was using a much more formal style perhaps more akin to written English which may have contributed to the

slower speech rate. Also, of primary interest, is that the researchers found that despite the reduction in speech rate there was no obvious reduction in the amount of content delivered.

An aspect of interaction which has received little attention at HE level in the EMI context is the use of the L1 by teachers. Codeswitching behaviour was documented by Tarnopolsky & Goodman (2014) in a Ukrainian university by comparing codeswitching between EFL and EMI classes using a corpus of 52 lectures. EMI teachers switched for similar reasons to those in EFL classes, for example, explaining the meaning of words, and checking students' comprehension. However, EMI teachers, unlike their EFL counterparts, did not switch for grammatical explanations, suggesting that the teaching of language forms was not high on their agenda. One reason for codeswitching that did appear to be specific to the EMI classes was explaining in L1 subject-specific English terminology encountered by students. A second different reason for switching (p. 388) was due to the (somewhat rare) occasions when the teacher did not know or had forgotten a word in English and therefore was obliged to slip back to L1. The latter is a reason for codeswitching not often found (or at least admitted to) in the EFL literature. Costa (2012) also found evidence of codeswitching to L1 Italian in her corpus of 16 hours of lectures. An interesting finding was that the lecturers switched even though there were non-native speakers of Italian in the audience; there were as many as 25% non-natives in one of the classes (Architecture). Nonetheless, in one episode the lecturer appears to be using an Italian expression 'fabbrica del duomo' and then translating it into English presumably, as Costa suggests, for the benefit of the international students.

4. Summary of findings and discussion

Our systematic review of HE comes ten years after Coleman's (2006) paper in this journal, documenting some of the then available evidence on EMI. Our aim was to build on that work through a systematic review of a large corpus of research evidence and also to contextualise the HE research endeavour in the broader landscape of studies where content has been learnt through an L2. From the very beginning we became cognisant of the complexity of that landscape and realised that attempting to systematically review the whole body of research in all phases would be a huge undertaking. We are also aware of the contested nature of defining EMI and CLIL by the language of most of the population in which the learning through English is taking place. This means that it is as yet impossible to conclude definitively which is the 'umbrella term' and which are the subordinate terms within a classification. Our conclusions regarding the problem with labels and definitions mirror similar concerns expressed by others in the field (e.g. Smit & Dafouz 2012; Cenoz, Genesee & Gorter 2014). Nevertheless, we now summarise our findings.

4.1 Summary of findings

1. Throughout the educational phases, Asia and Europe dominate the body of research carried out on EMI. Africa is particularly poorly represented in HE although better represented in other phases.

2. In all phases of education, no particular design type stands out as being the one most adopted by researchers in order to explore the research questions.
3. In primary and secondary education, there appears to have been a much greater focus than in HE on comparing the nature of classes taught through L1 and classes taught through English.
4. In primary and secondary education, there appears to have been a much greater focus than in HE on comparing the outcomes of L2-taught programmes with L1-taught programmes.

Specifically in HE:

1. There is a lack of consensus in the research field as to what label should be attributed to the phenomenon under observation and there is a lack of definition and specification as to what that label actually represents. Is EMI the 'umbrella term' which then encompasses CLIL, ICLHE, and so on? This lack of consensus is only just beginning to be tackled through theoretical analysis and discussion (see, for example, Dafouz & Smit 2014).
2. Growth of EMI in HE is evident in all geographical areas of the world although there are a few individual countries where it is in a state of contestation or even decline (e.g. Malaysia and Qatar). Europe is the only area which has received repeated and rigorous measurement of that growth.
3. Growth appears to be top-down policy driven, rather than bottom-up and promoted by enthusiastic key stakeholders (teachers and students).
4. The research field has expanded rapidly post-2005 in line with the growth of EMI.
5. EMI in HE research is dominated by research questions relating to teacher and/or student beliefs, perceptions and attitudes towards its introduction and practice.
6. There is a dearth of research, using objective tests rather than self-report, on the impact of EMI on improving students' English proficiency. There is also a dearth of research on the impact of EMI on content learning. This means that any cost-benefit evaluation of EMI is inconclusive at best and impossible at worst.
7. We need more studies which document transition from secondary education to HE.
8. The preponderance of research based on case studies of single institutions further exacerbates the problem of not being able to ascertain the impact of EMI on either English proficiency or on content learning. The almost total absence of any comparative studies amongst institutions and/or amongst countries (except for the issue of EMI growth) means that the rigour offered by comparative education methodology (Bray, Adamson & Mason 2014) is largely absent.
9. In terms of teacher and/or student beliefs, the positive motivations are: attracting international/foreign students; compensating for lack of resources in L1; instrumental advantages for home students (improving English and opportunities to study abroad); high value placed on international English.
10. The negative motivations amongst teachers and students can be summarised as levels of English proficiency being too low and its potentially negative impact on content. Additional concerns include: the creation or consolidation of socio-economic elites and anti-egalitarian outcomes for students; additional workload for teachers switching to EMI; lack of teacher professional development and support.

11. In terms of student beliefs and attitudes, variables such as gender, private-versus public, different academic subjects, different year levels, have not been sufficiently explored.
12. The concept of 'proficiency needed to teach through EMI' is underspecified either through empirical research or by institutional requirements.
13. Compared to the secondary sector there is a lack of research on classroom interaction in HE and what there is provides only a fragmented picture.

4.2 Weight of evidence measure

Each of the 83 studies was read in depth and information extracted from it 'blind' by two members of the review team who independently filled in a grid (see Appendix 4, Supplementary Materials) before they came together to discuss different interpretations and evaluations of what they had read. This procedure follows the systematic review guidelines to which we have previously referred. The 'weight of evidence' was measured on four criteria: the relevance of the research topic(s) of each study to the current review; the appropriateness of the research design to answer our review questions; the quality of the way the individual study was conducted and the trustworthiness of the research findings and conclusions; and the contribution of the research paper in general to this systematic review.

We must acknowledge that, even with two independent raters following guidelines (having received training based on the Evidence for Policy and Practice Information (EPPI) educational guidelines, 2017), a degree of subjectivity remains. Nevertheless, we would argue that Table 4 represents a fairly accurate picture of the overall state of research of EMI in HE. The table shows that of the 83 studies, 86% were judged to have either high or medium relevance to what we were trying to find out. Put differently, the topic or topics that the studies addressed were indeed of interest to us in trying to answer the review questions. Just 22% of the studies employed research designs which, prima facia, we judged as highly appropriate and 56% as fairly appropriate in answering the review questions. Only 16% of the 83 studies were judged to have a high level of trustworthiness (51% medium level). Thus, our overall conclusion about what we had read suggested that in all only 16% of studies were able to make a powerful contribution to answering our review questions and 55% a fairly strong contribution.

This suggests that research in EMI, despite the widespread and growing interest in the phenomenon, is still in an adolescent stage. The research agenda for the moment appears to be ad hoc, or at least without a consensus from the research community of what it should be. The level of quality of the research we would imagine could be improved considerably if there was greater discussion of what that agenda might be.

4.3 Discussion

Whilst we fully acknowledge the importance of exploring teacher and student beliefs about EMI in HE, several problems arise when we look at the bulk of research on this particular aspect. Researchers may well report that lecturers see the advantages of internationalisation

Table 4 Weight of evidence of research in EMI in HE

	Relevance to this review (%)	Appropriateness of research design to review questions (%)	Trustworthiness (%)	Overall contribution to this systematic review (%)
High	48	22	16	16
Medium	38	56	51	55
Low	12	21	33	29

whilst at the same time displaying anxieties relating to lack of English language proficiency, a slowing down of, or detrimental effect on, curriculum delivery as well as the burdens of an additional workload. This identification of advantages and disadvantages does not IN THE END lead to conclusions as to whether it should be implemented in a particular institution and/or country. Rather, the research community needs to better theorise the cost-benefits ratio of EMI based on empirical research and to work out a model whereby the positives and the negatives can be rigorously evaluated. This model, we would tentatively propose, needs to encompass a range of factors.

First, is the improved English competence of students a reality? For this we need to establish theoretically what kind of competence outcomes we would be looking for. What kind of English are we talking about? A standard native speaker variety measured by an international test such as IELTS, a nativised variety (e.g. Nigerian English) as appropriate to the context, or a medium of communication as in ELF (Jenkins 2014). Moreover, research which shows that students' listening skills improved (Maiz-Arévalo & Dominguez-Romero 2013; Aguilar & Muñoz 2014) is not providing evidence of equipping graduates with the linguistic skills they need for their study and future employment, and improved listening skills might be predictable with an increased exposure to English in lectures. One of the weaknesses of the studies reviewed is that any comparison between EMI and EFL provision, in terms of language improvement, has not considered these factors nor carefully controlled for confounding variables in the comparison of the two systems of provision (e.g. EMI students additionally obtaining EFL tuition).

Second, there should be no long-term negative impact on content learning – the last thing, we would hope, any policy maker or teacher would want is engineers, doctors and lawyers unable to do their job properly because they have misunderstood and/or poorly internalised the content they have attempted to learn. Of course, content can be poorly internalised or misunderstood in L1 MOI contexts but we would argue the likelihood is simply greater when it is being learnt through a less proficient L2. The research designs and testing instruments used by researchers in our review have been particularly questionable in establishing impact on content learning in HE. As we have observed, research in other phases of education have taken the issues of language improvement and impact on content learning much more seriously.

Third, is there a measurable improved national competence in English as an L2? This could be evidence of improvement over time in comparison with other countries such as provided by international surveys (e.g. the English Proficiency Index). If an improved national competence in English was detected, could this be measured for whether it was having a causal effect

on the nation's economic performance? For this we would need both an economics research perspective (e.g. evidence of impact on gross domestic product) and whether students' career prospects on the global market had actually been enhanced (Munshi & Rosenzweig 2006; Kapur & Chakraborty 2008; Chakraborty & Bakshi 2016).

Fourth, we need to investigate any possible negative impact on the home language (or majority language). A number of commentators have documented or expressed a belief that English in HE might pose a threat to the home language (Skutnabb-Kangas 2000; Pennycook 2014; Galloway & Rose 2015). Coleman's state-of-the-art review some ten years ago (2006: 11) suggested that: 'the world will become diglossic, with one language for local communication, culture and expression of identity, and another – English – for wider and more formal communication, especially in writing'. If that were indeed the case, then it could be argued that EMI is not an entire disaster as some commentators have suggested (Phillipson 2006). However, to arrive at a true understanding of the impact on the home language we will need evidence both from a sociolinguistic perspective (do the speakers of that L1 report feeling disenfranchised, their language devalued or threatened?) and from an educational literature perspective (to what extent is the availability of materials and resources diminishing in the L1 as a result of EMI in general and in HE in particular?). Linked to this enquiry should also be the extent that a brain-drain of the brightest and the best leaving the home country might have on the language as well as the economy.

Fifth, more studies of the kind by Lin & Morrison (2010) which highlight transition from secondary to tertiary are needed. HE EMI cannot be considered in isolation from what has come before in the same way that future reviews of secondary EMI cannot ignore the possible downward pressures from HE. Is there a gradual progression in student competence to thrive in an EMI environment or is it a sudden shock with permanently negative consequences, as some teachers have commented (Dearden & Macaro 2016)?

Sixth, EMI programmes have to be carefully conceived, planned and resourced (Lasagabaster et al. 2014). Probably the greatest amount of planning and resourcing needs to go into university teacher preparation and professional development. Currently there are virtually no parameters (Lasagabaster et al. 2014) to identify the competence of a teacher to teach through EMI (and here we would certainly include native speakers of English!). This lack of teacher preparation is certainly not specific to EMI HE (see Probyn (2006) in the secondary phase in South Africa). However, when the overwhelming evidence, both in this review of HE and elsewhere (Yip, Coyle & Tsang 2007), that teachers believe they are not responsible for students' English language difficulties, then it is clear that teacher preparation and in-service development programmes have to include a very heavy emphasis on awareness of how learners learn and use language. The lack of consensus regarding what EMI in HE actually is (is it more like CLIL or not?) adds to the problem of what planning and resourcing should be taking place.

4.4 Limitations of this review

Papers written in languages other than English, listed on the electronic databases searched, were not included because of resource and space implications (but see the Supplementary

Materials in Appendix 5 for the Chinese search procedure.) In addition, our search strategy was not able to locate several chapters in books which more recently we have become aware of through non-electronic search means.

As the search of electronic databases was completed in November 2015, literature published since then has not been included in the in-depth review. In addition, 'grey literature'[1] was not included in this search, nor blog posts, nor magazine or newspaper articles which have reported the changing EMI situation in countries such as Tanzania (see, for example, Mohammed 2015) or ongoing debates happening in Fiji (see Maharaj 2014). The reliability of the exclusion of studies based on titles and abstracts may be uncertain due to ambiguity, vagueness and lack of clarity, which made the relevance of studies challenging to assess. Finally, although numerous sources were searched and located, inherent publication bias cannot be ignored, which could lead to this review reinforcing the 'file drawer' effect.

5. Conclusions

Our review findings broadly concur with those articulated in the review by Williams (2015: 1) whose key conclusion was that 'current EMI implementation produces more challenges than opportunities' for HE teachers and students. We hope that the scope of our study has added both greater breadth and depth to support that conclusion.

Where will EMI in HE be in ten years' time? The future is always difficult to predict when myriad variables are involved. One thing is clear: policy makers and particularly university managers are not going to be swayed by sociolinguistic and sociocultural objections to the implementation of EMI as proclaimed in books on the subject. In view of that, it is hard to see anything but further expansion of EMI in HE. However, such leaders may be influenced by hard research evidence of the kind we have wished for in the above discussion and building on the findings of the current state of research. If they are convinced by research that their institutions may actually be damaged by the introduction or development of EMI without adequate planning, then, whilst perhaps still not reversing Coleman's (2006) 'inexorable increase', at the very least they will introduce the kinds of systematic reforms of teacher preparation and resourcing that are evidently and urgently needed.

Questions arising

1. Can the research field, as a collective endeavour, arrive at a model of the different learning situations in which content and language are at issue? Is it possible to identify and then define relatively stable superordinate and subordinate terminology for these learning situations within such a model?

---

[1] 'Grey literature' is defined as research produced by individuals or organisations not using the traditional or academic publishing channels.

2. Is it possible to carry out research of growth and implementation of EMI in HE at the supranational level in the same way that such research has been carried out in Europe, for example, in geographical areas such as the Middle East, Sub-Saharan Africa or that covered by the Association of Southeast Asian Nations? Where would the resources for such large-scale research be available, and what challenges would researchers face in carrying out this kind of research?

3. The current review has identified considerable research on teacher and/or student beliefs and attitudes towards EMI in HE. But do these beliefs and attitudes change over time or over the course of a programme of study?

4. The identified lack of research evidence on the impact of EMI on improving students' English proficiency requires more focused and clearly conceptualised investigation. Is it possible to arrive at a consensus of what type of English (e.g. native speaker variety, nativised varieties) we should be measuring in relation to EMI programme entry and EMI programme outcomes?

5. Does EMI lead to a measurable improved national competence in English (e.g. as measured by the Eurobarometer) as opposed to EFL-only provision?

6. What is the impact of EMI on content learning? If a negative impact is found, is it long term (i.e. only temporary as students catch up with the required proficiency level of language) and what is the magnitude of that negative impact?

7. What challenges do students face as they make the transition from secondary education EMI or CLIL to university programmes taught through EMI?

8. Do different HE institutions (e.g. private and state) experience different levels of success in implementing EMI? If so, why?

9. Is it possible to arrive at a consensus in the field (between researchers and EMI practitioners) of the concept of 'language proficiency and teaching skills needed to teach through EMI'? Is it possible to measure and then provide certification for such a concept?

10. What is the possible negative impact of EMI on the home language and the home culture? How would we measure that and what might be the variables amongst different countries (e.g. large and small countries)?

Acknowledgements

stages of the production of this review. Our thanks also go to Graeme Porte for his excellent editorial advice.

Supplementary Material: To view supplementary material for this article, please visit https://doi.org/10.1017/S0261444817000350

References

Aguilar, M. & C. Muñoz (2014). The effect of proficiency on CLIL benefits in Engineering students in Spain. *International Journal of Applied Linguistics* 24.1, 1–18.

Aguilar, M. & R. Rodríguez (2012). Lecturer and student perceptions on CLIL at a Spanish university. *International Journal of Bilingual Education and Bilingualism* 15.2, 183–197.

Airey, J. (2011). Talking about teaching in English: Swedish university lecturers' experiences of changing teaching language. *Ibérica* 22, 35–54.

Airey, J. (2012). *The impact of English-medium instruction in higher education. Lecture at Universitat Pompeu Fabra*, Barcelona 22 November 2012. Retrieved from http://www.upf.edu/llengues/_pdf/Presentacix_J.Airey.pdf.

Ali, N. L. (2013). The changing paradigm in language planning: English-medium instruction policy at the tertiary level in Malaysia. *Current Issues in Language Planning* 14, 73–92.

Al-Masheikhi, F., R. Al-Mahrooqi & C. J. Denman (2014). *Investigating college of science student attitudes towards using English as a medium of instruction*. Paper presented at the 2014 WEI international academic conference, New Orleans, USA. Retrieved from http://www.westeastinstitute.com/wp-content/uploads/2014/11/Eiman-Rahma-Christopher.pdf.

Bartram, B. (2008). Supporting international students in higher education: Constructions, cultures and clashes. *Teaching in Higher Education* 13.6, 657–668.

Başıbek, N., M. Dolmacı, B. C. Cengiz, B. Bürd, Y. Dilek & B. Kara (2014). Lecturers' perceptions of English medium instruction at Engineering departments of higher education: A study on partial English medium instruction at some state universities in Turkey. *Procedia-Social and Behavioural Sciences*, 1819–1825.

Belhiah, H. & M. Elhami (2014). English as a medium of instruction in the Gulf: When students and teachers speak. *Language Policy* 14.1, 3–23.

Björkman, B. (2008). 'So where we are?' Spoken lingua franca English at a technical university in Sweden. *English Today* 24.2, 35–41.

Bolton, K. & M. Kuteeva (2012). English as an academic language at a Swedish university: Parallel language use and the 'threat' of English. *Journal of Multilingual and Multicultural Development* 33.5, 429–447.

Borg, S. (2016). *English medium instruction in Iraqi Kurdistan*. London: British Council. Retrieved from http://www.teachingenglish.org.uk/article/english-medium-instruction-iraqi-kurdistan-perspectives-lecturers-state-universities.

Bozdoğan, D. & B. Karlıdağ (2013). A case of CLIL practice in the Turkish context: Lending an ear to students. *Asian EFL Journal* 15.4, 89–110.

Bray, M., B. Adamson & M. Mason (eds.) (2014). *Comparative education research: Approaches and methods* (2nd edn.). Cham: Springer.

Brenn-White, M. & E. van Rest (2012). *English-taught master's programs in Europe: New findings on supply and demand*. New York: Institute of International Education. Retrieved from: http://www.iie.org/Research-and-Publications/Publications-and-Reports/IIE-Bookstore/English-Language-Masters-Briefing-Paper#.V8yX4o-cG3g.

Brenn-White, M. & E. Faethe (2013). *English-taught master's programs in Europe: A 2013 update*. New York: Institute of International Education. Retrieved from http://www.iie.org/Research-and-Publications/Publications-and-Reports/IIE-Bookstore/English-Language-Masters-Briefing-Paper-2013-Update#.V8yYMo-cG3g.

Brown, P. S. (2013). Teaching a medical English CLIL course with vocabulary learning strategies instruction in Japan. *The Asian EFL Journal Special Edition* 15.4, 276–305.

Bryan, N. & E. Habte-Gabr (2008). Strategies for teaching geography electives in English to native Spanish speakers at a Colombian university. *Latin American Journal of Content & Language Integrated Learning* 1.1, 1–14.

Byun, K., H. Chu, M. Kim, I. Park, S. Kim & J. Jung (2010). English-medium teaching in Korean higher education: Policy debates and reality. *Higher Education* 62.4, 431–449.

Campagna, S. (2016). English as a medium of instruction. A 'resentment study' of a micro EMI context. In Campagna, S., E. Ochse, V. Pulcini & M. Solly (eds.), '*Languaging' In and Across Communities: New Voices, New Identities. Studies in Honour of Giuseppina Cortese*. Bern: Peter Lang, 145–168.

Cenoz, J., F. Genesee & D. Gorter (2014). Critical analysis of CLIL: Taking stock and looking forward. *Applied Linguistics* 35, 243–262.

Centre for Internationalisation and Parallel Language Use, University of Copenhagen. *Test of Oral English Proficiency for Academic Staff*. Retrieved from: http://cip.ku.dk/english/documents/TOEPAS_2.0_A4_final.pdf .

Chakraborty, T. & S. K. Bakshi (2016). English language premium: Evidence from a policy experiment in India. *Economics of Education Review* 50, 1–16.

Chapple, J. (2015). Teaching in English is not necessarily the teaching of English. *International Education Studies* 8.3, 1.

Cho, D. W. (2012). English-medium instruction in the university context of Korea: Trade-off between teaching outcomes and media-initiated university ranking. *The Journal of Asia TEFL* 9.4, 135–163.

Cho, J. (2012). Campus in English or campus in shock? *English Today* 28.2, 18–25.

Choi, S. J. (2013). Issues and challenges in offering English-medium instruction: A close examination of the classroom experiences of professors. *Studies in English Language & Literature* 39.2, 275–306.

Coleman, J. A. (2006). English-medium teaching in European higher education. *Language Teaching* 39.1, 1.

Costa, F. (2012). Focus on form in ICLHE lectures in Italy: Evidence from English-medium science lectures by native speakers of Italian. *AILA Review* 25.1, 30–47.

Cummins, J. (1979). Cognitive/academic language proficiency, linguistic interdependence, the optimum age question and some other matters. *Working Papers on Bilingualism* 19, 121–129.

Dafouz, E. & U. Smit (2014). Towards a dynamic conceptual framework for English-medium education in multilingual university settings. *Applied Linguistics* 37.3, 397–415.

Dafouz, E., M. Camacho & E. Urquia (2014). 'Surely they can't do as well': a comparison of business students' academic performance in English-medium and Spanish-as-first-language-medium programmes. *Language and Education* 28.3, 223–236.

Dafouz, E., B. Núñez & C. Sancho (2007). Analysing stance in a CLIL university context: Non-native speaker use of personal pronouns and modal verbs. *International Journal of Bilingual Education and Bilingualism* 10.5, 647–662.

Dalton-Puffer, C. (2007). *Discourse in content and language integrated (CLIL) classrooms*. Amsterdam: John Benjamins.

Dearden, J. (2015). *English as a medium of instruction —a growing global phenomenon*. London: British Council. Retrieved from https://www.britishcouncil.org/sites/default/files/e484_emi_cover_option_3_final_web.pdf.

Dearden, J. & E. Macaro (2016). Higher education teachers' attitudes towards English: A three country comparison. *Studies in Second Language Learning and Teaching* 6.2, 3–34.

Doiz, A., D. Lasagabaster & J. M. Sierra (2011). Internationalisation, multilingualism and English-medium instruction. *World Englishes* 30.3, 345–359.

Earls, C. W. (2016). *Evolving agendas in European English-medium higher education: Interculturality, multilingualism and language policy*.Basingstoke: Palgrave Macmillan.

Elder, C. & K. O'Loughlin (2003). *Investigating the relationship between intensive English language study and band score gain on IELTS*. IELTS Research Reports 4.

Ellili-Cherif, M. & H. Alkhateeb (2015). College students' attitude toward the medium of instruction: Arabic versus English dilemma. *Universal Journal of Educational Research* 3.3, 207–213.

EPPI Centre (2017). *Evidence for Policy and Practice Information (EPPI) and co-ordinating centre*. Retrieved 6 March 2017, from https://eppi.ioe.ac.uk/cms.

Escobar Urmeneta, C. (2013). Learning to become a CLIL teacher: Teaching, reflection and professional development. *International Journal of Bilingual Education and Bilingualism* 16.3, 334–353.

Evans, S. & B. Morrison (2011). Meeting the challenges of English-medium higher education: The first-year experience in Hong Kong. *English for Specific Purposes* 30.3, 198–208.

Fenton-Smith, B., P. Humphries & I. Walkinshaw (2017). *English medium instruction in higher education in Asia Pacific: From policy to pedagogy*. Dordrecht: Springer.

Francomacaro, R. M. (2011). *English as a medium of instruction at an Italian Engineering faculty: An investigation of structural features and pragmatic functions*. (Doctoral dissertation). Università degli Studi di Napoli Federico II, Italy. Retrieved from http://www.fedoa.unina.it/8637/1/francomacaro_mariarosaria_24.pdf.

G30 (2016). *About Global30 | Study in Japan*. Retrieved August 30, 2016, from http://www.uni.international.mext.go.jp/.

Galloway, N. & H. Rose (2015). *Introducing global Englishes*. London: Routledge.

Gao, X. (2008). Shifting motivational discourses amongst mainland Chinese students in an English medium tertiary institution in Hong Kong: A longitudinal inquiry. *Studies in Higher Education* 33.5, 599–614.

Ghorbani, M. R. & S. Z. Alavi (2014). Feasibility of adopting English-medium instruction at Iranian universities. *Current Issues in Education* 17.1, 1–17.

Gough, D., S. Oliver & J. Thomas (2012). *An introduction to systematic reviews*. London: SAGE.

Graddol, D. (2006). *English Next*. Retrieved 3 September, 2016, from https://englishagenda.britishcouncil.org/sites/default/files/attachments/books-english-next.pdf .

Guarda, M. & F. Helm (2016). 'I have discovered new teaching pathways': The link between language shift and teaching practice. *International Journal of Bilingual Education and Bilingualism*, 1–17. http://dx.doi.org/10.1080/13670050.2015.1125848.

Hamid, M. O. & I. Jahan (2015). Language, identity, and social divides: Medium of instruction debates in Bangladeshi print media. *Comparative Education Review* 59.1, 75–101.

Hamid, M. O., I. Jahan & M. M. Islam (2013). Medium of instruction policies and language practices, ideologies and institutional divides: Voices of teachers and students in a private university in Bangladesh. *Current Issues in Language Planning* 14.1, 144–163.

Hellekjaer, G. O. (2010). Assessing lecture comprehension in Norwegian English-medium higher education. *Language Use and Language Learning in CLIL Classrooms* 7, 233.

Hengsadeekul, C., R. Koul & S. Kaewkuekool (2014). Motivational orientation and preference for English-medium programs in Thailand. *International Journal of Educational Research* 66, 35–44.

Hino, N. (2017). The significance of EMI for the learning of EIL in higher education: Four cases from Japan. In B. Fenton-Smith et al. (eds.), 125–140.

Hoare, P. (2003). *Effective teaching of science through English in Hong Kong secondary schools* (Doctoral dissertation). University of Hong Kong, Hong Kong. Retrieved from https://hub.hku.hk/bitstream/10722/39139/15/FullText.pdf.

Hu, G. & J. Lei (2014). English-medium instruction in Chinese higher education: A case study. *Higher Education* 67.5, 551–567.

Hu, G., L. Li & J. Lei (2014). English-medium instruction at a Chinese University: Rhetoric and reality. *Language Policy* 13.1, 21–40.

Hu, G. & S. L. McKay (2012). English language education in East Asia: Some recent developments. *Journal of Multilingual and Multicultural Development* 33.4, 345–362.

Huang, D. F. (2015). Exploring and assessing effectiveness of English medium instruction courses: The students' perspectives. *Procedia-Social and Behavioral Sciences* 173, 71–78.

Hudson, P. (2009). Learning to teach science using English as the medium of instruction. *EURASIA* 5.2, 165–170.

Hultgren, A. K. (2014). English language use at the internationalised universities of Northern Europe: Is there a correlation between Englishisation and world rank? *Multilingua* 33.3–4, 389–411.

Inbar-Louie, O. & S. Donista-Schmidt (2012). Englishization in an Israeli teacher education college: Taking the first steps. In A. Doiz, D. Lasagabaster & J. M. Sierra (eds.), *English medium instruction at universities: Global challenges*. Bristol: Multilingual Matters, 151–173.

Islam, M. M. (2013). English medium instruction in the private universities in Bangladesh. *Indonesian Journal of Applied Linguistics* 1.3, 126–137.

Ismail, W. R., Z. Mustafa, N. Muda, N. Z. Abidin, Z. Isa, A. M. Zakaria, N. R. M. Suradi, N. J. Z. Mamat, R. M. Nazar, Z. M. Ali, N. M. Rafee, N. Majid, S. H. Jaaman, M. Darus, R. R. Ahmad, F. A. Shahabuddin, A. S. Rambely, U. K. S. Din, I. Hashim, H. Ismail, A. G. Ahmad, M. S. M. Noorani, S. N. M. Ramli & M. I. Azlan (2011). Students' inclination towards English language as medium of instruction in the teaching of science and mathematics. *Procedia-Social and Behavioral Sciences* 18, 353–360.

Iyobe, B. & J. Lia (2013). CLIL to what degree: A trial in English-medium education at a Japanese university–is it CLIL or not. *Asian EFL Journal* 15.4, 372–381.

Jawhar, S. (2012). *Conceptualising CLIL in a Saudi context: A corpus linguistic and conversation analytic perspective* (Doctoral dissertation). University of Newcastle Upon Tyne, UK. Retrieved from https://theses.ncl.ac.uk/dspace/bitstream/10443/1849/1/Jawhar12.pdf.

Jenkins, J. (2014). *Global Englishes: A resource book for students* (3rd edn.). London: Routledge.

Jensen, C. & J. Thøgersen (2011). Danish University lecturers' attitudes towards English as the medium of instruction. *Ibérica* 22 (autumn), 13–34.

Jiménez-Castellanos, O., J. Blanchard, K. Atwill & M. Jiménez-Silva (2014). Beginning English literacy development and achievement among Spanish-speaking children in Arizona's English-only classrooms: A four-year two-cohort longitudinal study. *International Multilingual Research Journal* 8.2, 104–123.

Jiménez-Muñoz, A. J. (2014). Measuring the impact of CLIL on language skills: A CEFR-based approach for Higher Education. *Language Value* 6.1, 28–50.

Joe, Y. & H.-K. Lee (2013). Does English-medium instruction benefit students in EFL contexts? A case study of medical students in Korea. *Asia-Pacific Education Research* 22.2, 201–207.

Kachru, B. B. (1985). Standards, codification, and sociolinguistic realm: The English language in the outer circle. In R. Quirk & H. G. Widdowson, *English in the World: Teaching and learning the language and literatures*. Cambridge: Cambridge University Press, 11–30.

Kang, S. & H. Park (2005). English as the medium of instruction in Korean Engineering education. *Korean Journal of Applied Linguistics* 21.1, 155–174.

Kapur, S., & T Chakraborty (2008). *English language premium: Evidence from a policy experiment in India*. JEL classifications: H4, I2, J0, O1. Retrieved from: http://www.isid.ac.in/~pu/conference/dec_08_conf/Papers/ShilpiKapur.pdf.

Khan, H. I. (2013). An investigation of two universities' postgraduate students and their teachers' perceptions of policy and practice of English medium of instruction (EMI) in Pakistani universities. Doctoral dissertation, University of Glasgow. Retrieved from http://theses.gla.ac.uk/4451/1/2013Khanphd2.pdf .

Kilickaya, F. (2000). Instructors' attitudes towards English-medium instruction in Turkey. *Humanising Language Teaching* 6.8, 1–12.

Kilickaya, F. (2006). Instructors' attitudes towards English-medium instruction in Turkey. *Humanising Language Teaching* 8.6, 1–16.

Kim, E. G. (2017). English-medium instruction in Korean higher education: Challenges and future directions. In B. Fenton-Smith et al. (eds.), *English medium instruction in higher education in Asia-Pacific: From policy to pedagogy*, Dordrecht: Springer, 54–72.

Kim, A., Y. D. Son & S. Y. Sohn (2009). Conjoint analysis of enhanced English medium instruction for college students. *Expert Systems with Applications* 36.6, 10197–10203.

Kim, E. G. & A. Shin (2014). Seeking an effective program to improve communication skills of non-English-speaking graduate Engineering students: The case of a Korean Engineering school. *IEEE Transactions on Professional Communication* 57.1, 41–55.

Kim, J., B. Tatar & J. Choi (2014). Emerging culture of English-medium instruction in Korea: Experiences of Korean and international students. *Language and Intercultural Communication* 14.4, 441–459.

Kirkgöz, Y. (2009). Globalization and English language policy in Turkey. *Educational Policy* 23.5, 663–684.

Kirkgöz, Y. (2014). Students' perceptions of English language versus Turkish language used as the medium of instruction in higher education in Turkey. *Turkish Studies* 9.12, 443–459.

Kirkpatrick, A. (2011). English as a medium of instruction in Asian education (from primary to tertiary): Implications for local languages and local scholarship. *Applied Linguistics Review* 2, 99–120.

Klaassen, R. G. & E. De Graaff (2001). Facing innovation: Preparing lecturers for English-medium instruction in a non-native context. *European Journal of Engineering Education* 26.3, 281–289.

Kling, J. & L. S. Stæhr (2012). *The development of the test of oral English proficiency for academic staff (TOEPAS)*. University of Copenhagen.

Knight, J. (2013). The changing landscape of higher education internationalisation – for better or worse? *Perspectives: Policy and Practice in Higher Education* 17.3, 84–90.

Lasagabaster, D. & J. M. Sierra (2009). Immersion and CLIL in English: More differences than similarities. *ELT Journal* 64.4, 367–375.

Lasagabaster, D., A. Doiz, & J. M. Sierra (2014). Motivation: Making connections between theory and practice. In D. Lasagabaster, A. Doiz & J. M. Sierra (eds.), *Motivation and foreign language learning: From theory to practice*, Amsterdam: John Benjamins, 173–183.

Lee, J. F. K. (2014). A hidden curriculum in Japanese EFL textbooks: Gender representation. *Linguistics and Education* 27, 39–53.

Lin, L. H. F. & B. Morrison (2010). The impact of the medium of instruction in Hong Kong secondary schools on tertiary students' vocabulary. *Journal of English for Academic Purposes* 9.4, 255–266.

Lo, Y. Y. (2014). L2 learning opportunities in different academic subjects in content-based instruction – evidence in favour of 'conventional wisdom.' *Language and Education* 28.2, 141–160.

Lueg, K. & R. Lueg (2015). Why do students choose English as a medium of instruction? A Bourdieusian perspective on the study strategies of non-native English speakers. *Academy of Management Learning & Education* 14.1, 5–30.

Macaro, E., M. Akincioglu & J. Dearden (2016). English-medium instruction in universities: A collaborative experiment in Turkey. *Studies in English Language Teaching* 4.1, 51.

Macaro, E., Z. Handley & C. Walter (2012). A systematic review of CALL in English as a second language: Focus on primary and secondary education. *Language Teaching* 45.1, 1–43.

Maharaj, M. (2014). English 'inadequacies'. *Fiji Times Online*. Retrieved 29 August 2016, from http://www.fijitimes.com/story.aspx?id=286002.

Mahboob, A. (2017). English medium instruction in higher education in Pakistan: Policies, perceptions, problems and possibilities. In B. Fenton-Smith et al. (eds.), Dordrecht: Springer, 74–98.

Maiworm, F. & B. Wächter (2002). *English-language-taught degree programmes in European higher education: Trends and success factors*. Bonn: Lemmens.

Maiz-Arévalo, C. & E. Dominguez-Romero (2013). Students' response to CLIL in tertiary education: The case of business administration and economics at Complutense University. *Revista de Linguistica Y Lenguas Aplicadas (RLLA)* 8, 1–12.

McMullen, G. (2014). The value and attributes of an effective preparatory English program: Perceptions of Saudi university students. *English Language Teaching* 7.7, 131–140.

Met, M. (1999). *Content-based instruction: Defining terms, making decisions*. NFLC Reports. Washington DC.

MEXT (2006). 大学における教育内容等の改革状況について 1. カリキュラム改革の実施状況−文部科学省[Current state of curriculum renewal]. Retrieved 16 August 2016, from http://www.mext.go.jp/b_menu/houdou/20/06/08061617/001.htm.

MOE (2001). 教育部关于印发《关于加强高等学校本科教学工作提高教学质量的若干意见》的通知 - [Guidelines for strengthening undergraduate education and improving the quality of undergraduate programs]. Retrieved from http://www.moe.gov.cn/publicfiles/business/htmlfiles/moe/moe_18/201006/88633.html.

MOE (2013). وزارة التعليم [The Kingdom of Saudi Arabia Ministry of Education]. Retrieved 16 August 2016, from http://www.moe.gov.sa/ar/Pages/default.aspx.

Mohammed, O. (2015). *Tanzania dumps English as its official language in schools, opts for Kiswahili*. Retrieved from http://qz.com/355444/tanzania-dumps-english-as-its-official-language-in-schools-opts-for-kiswahili/.

MOHESR (2007). United Arab Emirates Higher Education plan. Retrieved 16 August 2016, from http://planipolis.iiep.unesco.org/upload/United%20Arab%20Emirates/United%20Arab%20Emirates_Higher_Education_plan.pdf

MOHESR (2016). IIEP: Planipolis. Retrieved 16 August 2016, from http://planipolis.iiep.unesco.org/format_liste1_en.php?Chp2=United+Arab+Emirates.

Munshi, K. & M. Rosenzweig (2006). Traditional institutions meet the modern world: Caste, gender, and schooling choice in a globalizing economy. *The American Economic Review* 96.4, 1225–1252.

Naidoo, V. (2006). International education: A tertiary-level industry update. *Journal of Research in International Education* 5.3, 323–345.

Napoli, J. & J. Sourisseau (2013). L'EMILE est-il appliqué dans l'enseignement supérieur? Enquêtes sur le site toulousain. *Recherche et Pratiques Pédagogiques En Langues de Spécialité. Cahiers de l'Apliut* 32.3, 123–143.

Nunan, D. (2003). The impact of English as a global language on educational policies and practices in the Asia-Pacific region. *TESOL Quarterly* 37.4, 589–613.

Pennycook, A. (2014). *The cultural politics of English as an international language*. London: Routledge.

Pessoa, S., R. T. Miller & D. Kaufer (2014). Students' challenges and development in the transition to academic writing at an English-medium university in Qatar. *International Review of Applied Linguistics in Language Teaching* 52.2, 127–156.

Phillipson, R. (2006). Language policy and linguistic imperialism. In T. Ricento (ed.), *An introduction to language policy: Theory and method*. Oxford: Blackwell, 346–361.

Probyn, M. (2006). Language and learning science in South Africa. *Language and Education* 20.5, 391–414.

Project Atlas (2016). *International students in Japan*. Retrieved from http://www.iie.org/en/Services/Project-Atlas/Japan/International-Students-In-Japan#.V81PjI-cGEY.

Pulcini, V. & S. Campagna (2015). Internationalisation and the EMI controversy in Italian higher education, In S. Dimova, A. K. Hultgren & C. Jensen (eds.), *English-medium instruction in European higher education*. Boston/Berlin: De Gruyter Mouton, 65–87.

Riera, J. B. & C. M. Arévalo (2013). CLIL and translation in tertiary education. *Revista de Lenguas Para Fines Específicos* 19, 29–59.

Rogier, D. (2012). *The effects of English-medium instruction on language proficiency of students enrolled in higher education in the UAE* (Doctoral dissertation). University of Exeter, United Kingdom. Retrieved from https://ore.exeter.ac.uk/repository/bitstream/handle/10036/4482/RogierD.pdf?sequence=2.

Salton. (2005). Nurse shortage in Saudi Arabia. Retrieved 16 August 2016, from http://www.studymode.com/essays/Nurse-Shortage-In-Saudi-Arabia-55590.html.

Shohamy, E. (2012). A critical perspective on the use of English as a medium of instruction at Universities. In A. Doiz, D. Lasagabaster & J. M. Sierra (eds.), *English-medium instruction at universities: Global challenges*. London: Longman, 196–213.

Skutnabb-Kangas, T. (2000). *Linguistic genocide in education – or worldwide diversity and human rights?* Mahwah NJ: Lawrence Erlbaum.

Studer, P. (2014). Coping with English: students' perceptions of their teachers' linguistic competence in undergraduate science teaching. *International Journal of Applied Linguistics* 25.2, 183–201.

Suliman, W. A. & A. Tadros (2011). Nursing students coping with English as a foreign language medium of instruction. *Nurse Education Today* 31.4, 402–407.

Sultana, S. (2014). English as a medium of instruction in Bangladesh's higher education: Empowering or disadvantaging students? *Asian EFL Journal* 16.1, 11–52.

Smit, U. (2010). *English as a lingua franca in higher education. A longitudinal study of classroom discourse*. Berlin, Boston: De Gruyter Mouton.

Smit, U. & E. Dafouz (2012). Integrating content and language in higher education: Gaining insights into English-medium instruction at European universities (AILA volume 25). Amsterdam: John Benjamins.

Swales, J. M. (1997). English as Tyrannosaurus rex. *World Englishes* 16.3, 373–382. http://doi.org/10.1111/1467-971X.00071.

Tai, H.-Y. (2015). Writing development in syntactic complexity, accuracy and fluency in a content and language integrated learning class. *International Journal of Language and Linguistics* 2.3, 149–156.

Tarnopolsky, O. B. & B. A. Goodman (2014). The ecology of language in classrooms at a university in eastern Ukraine. *Language and Education* 28.4, 383–396.

Tatzl, D. & B. Messnarz (2013). Testing foreign language impact on Engineering students' scientific problem-solving performance. *European Journal of Engineering Education* 38.6, 620–630.

TGU (2016). *Selection for the FY 2014 top global university project*. Retrieved from http://www.mext.go.jp/b_menu/houdou/26/09/__icsFiles/afieldfile/2014/10/07/1352218_02.pdf.

Thøgersen, J. & J. Airey (2011). Lecturing undergraduate science in Danish and in English: A comparison of speaking rate and rhetorical style. *English for Specific Purposes* 30.3, 209–221.

Trent, J. (2008). Promoting investment by Chinese learners in classroom discourse Integrating content and language in the undergraduate classroom. *Journal of Asian Pacific Communication* 18.1, 30–48.

Vinke, A. A. (1995). *English as the medium of instruction in Dutch Engineering education*. Doctoral dissertation, Delft University of Technology, the Netherlands. Retrieved from http://repository.tudelft.nl/islandora/object/uuid:491b55f9-fbf9-4650-a44d-acb9af8412a8?collection=research.

Vu, N. T. T. & A. Burns (2014). English as a medium of instruction: Challenges for Vietnamese tertiary lecturers. *The Journal of Asia TEFL* 11.3, 1–31.

Wächter, B. & F. Maiworm (2008). *English-taught programmes in European higher education: The picture in 2007.* Bonn: Lemmens Medien.

Wächter, B. & F. Maiworm (2014). *English-taught programmes in European higher education: The state of play in 2014.* Bonn: Lemmens.

Weber, S. (2011). Politics of English in the Arabian Gulf. In A. Akbarov (ed.), *FLTAL 2011 Proceedings.* Sarajevo: Burch University Press, 60–66.

Werther, C., L. Denver, C. Jensen & I. M. Mees (2014). Using English as a medium of instruction at university level in Denmark: The lecturer's perspective. *Journal of Multilingual and Multicultural Development* 35.5, 443–462.

West, R., A. Güven, J. Parry & T. Ergenekon (2015). *The state of English in higher education in Turkey: A baseline study.* Ankara, Turkey: British Council. Retrieved from http://www.britishcouncil.org.tr/sites/default/files/he_baseline_study_book_web_-_son.pdf.

Williams, D. (2015). A systematic review of EMI and implications for the South Korean HE context. ELT World online, 1–23, Retrieved at https://blog.nus.edu.sg/eltwo/2015/04/27/a-systematic-review-of-english-medium-instruction-emi-and-implications-for-the-south-korean-higher-education-context-2/.

Wu, P, S. G. Wang, X. Jiang, D. J. Zeng, Y. X. Guan & X. F. Li (2010). *Gaodeng xuexiao shuangyu jiaoxue de xianzhuang yanjiu he shijian tansuo [An exploratory study of English-medium instruction in Chinese higher education].* Beijing: Higher Education Press.

Wu, W. (2006). Students' attitude toward EMI: Using Chung Hua University as an example. *Journal of English and Foreign Language and Literature* 4.1, 67–84.

Yang, W. (2015). Content and language integrated learning next in Asia: Evidence of learners' achievement in CLIL education from a Taiwan tertiary degree programme. *International Journal of Bilingual Education and Bilingualism* 18.4, 361–382.

Yeh, C.-C. (2014). Taiwanese students' experiences and attitudes towards English-medium courses in tertiary education. *RELC Journal* 45.3, 305–319.

Yip, D. Y., D. Coyle & W. K. Tsang (2007). Medium of instruction on Science students: Instructional activities in Science lessons. *Education Journal* 35.2, 77–107.

ERNESTO MACARO is Professor of Applied Linguistics at the University of Oxford where he is Director of the Centre for Research and Development in English Medium Instruction (*EMI Oxford*) in the Department of Education. He teaches on the Masters in Applied Linguistics and on the Teacher Education Programme.

After SAMANTHA CURLE completed two degrees in Hong Kong: Bachelor of Education, and Bachelor of Linguistics, she taught English in Asia. She then completed two Masters degrees at Oxford: Applied Linguistics and Second Language Acquisition; and Research, Design and Methodology. She is now reading for a doctorate in Education on the topic of EMI.

JACK PUN is Assistant Professor, Department of English Language and Literature at the Hong Kong Baptist University. He holds a doctorate in Education from the University of Oxford, which explored the teaching and learning process in EMI science classrooms, with a special focus on classroom interaction, use of codeswitching, and teachers' and students' views of EMI.

JIANGSHAN AN (Tiny) is reading for a doctorate in Education at the University of Oxford. Previously she was teaching English full-time at secondary school level and university level in Hong Kong. Her research draws upon expertise in science education and language education to explore native English speaking teachers' use of EMI pedagogy in science classes, particularly their interaction with students.

JULIE DEARDEN is a lecturer at the University of Oxford. She has written on the global phenomenon of EMI, on teachers' and students' attitudes to EMI, on the value of co-planning and co-teaching and on the changing roles of EMI academics and English language specialists.