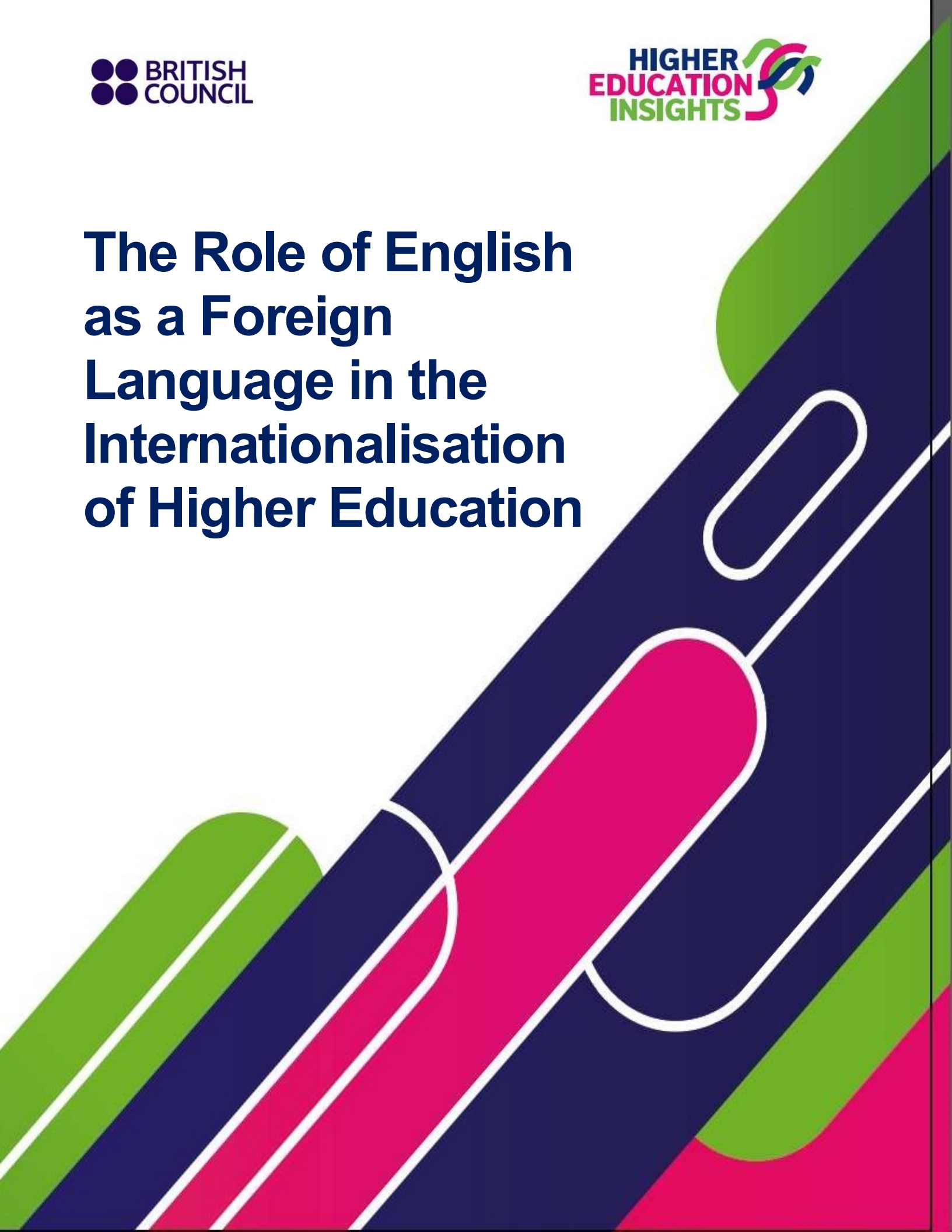


The Role of English as a Foreign Language in the Internationalisation of Higher Education



Biodata

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Abstract

As part of the Education and Society portfolio, the British Council in Argentina is developing on-site and remote services to promote the internationalisation of higher education (IHE). The goal is to increase the flow of students from and to other countries as well as the international reach and visibility of local educational programmes and scientific production. These milestones require developing the bilingual skills of students, teachers and researchers, with a strategic focus on English-language competencies. It is thus critical for those stakeholders to become aware of the (proven and probable) benefits of relevant initiatives, so that institutional IHE projects are supported by converging personal motivations. This report discusses the direct and indirect benefits of developing skills and services in English in the national and regional academic context. In particular, we address three theoretical and empirical dimensions informing specific courses of action. First, we consider the incorporation of English as a medium of instruction to expand the global appeal and dissemination of local academic programmes. Second, we discuss the role of English as a vital resource for internationalising the region's scientific production. Finally, we review research on the possible neurocognitive benefits of bilingualism. The courses of action identified include the organisation of open and closed events to raise awareness about these challenges, the delivery of general English language courses, the development of digital educational platforms with mediation in English, the organisation of specific workshops on scientific writing, and the production of informative audio-visual material. In short, this paper highlights the benefits of developing Spanish-English bilingualism as a prerequisite to the expansion of IHE in the local context.

- Key words: Internationalisation of Higher Education, Bilingualism, English as a Foreign Language, English as a Medium of Instruction, Massive Online Courses, Scientific Production, Neurocognitive Effects.

1. Introduction

As we enter the third decade of the twenty-first century, describing the world as a global village may sound trite or clichéd. However, the unrelenting spread of globalisation remains as strong as ever. Some decades ago, only the most adventurous (if not the most privileged) could consider professional development beyond their place of origin. With geographical, cultural, and linguistic distances that were prohibitive for most of the population, even personal development was largely limited to the random opportunities that one's homeland could provide. The current scenario has changed dramatically; technological and cultural developments have blurred the boundaries between countries, opening genuinely international pathways for educational, professional, and social growth. Although we are still far from the cosmopolis imagined by the Stoics, with each passing day we come closer to the aspiration of becoming "citizens of the world."

However, communities are still framed within geographical, political, and cultural boundaries, resulting in heterogeneity and inequality and posing distinct challenges to each social group. Given this context, the academic world is key to social transformation: educational settings foster specialised competences, applicable knowledge, and opportunities for social and professional development. In this sense, Argentina (and, more generally speaking, Latin America) faces a pressing requirement to maximise the transformative potential of academia: new actions must be promoted to raise awareness of the benefits, possibilities, and problems of globalisation, leading to innovations that (i) increase the international visibility of human capital, (ii) bridge the linguistic and cultural gaps of local students (without neglecting the essential requirement of multiculturalism), and (iii) maximize the global dissemination of local academic work.

Against this background, the British Council in Argentina, as part of its Education and Society portfolio, has developed on-site and remote services for institutions committed to the internationalisation of higher education (IHE). The overall aim is to enable public and private organisations, higher education institutions, research centres, and government agencies to strengthen and expand their capabilities in terms of student mobility, teaching, and research. This objective entails a set of actions to increase the flow of students to and from other countries (Dearden, 2014) as well as the international reach and visibility of local educational programmes and scientific production (with a focus on English-speaking countries).

The entire project depends on an essential social and cognitive requirement: bilingualism. To avoid restricting regional IHE to a circuit of Spanish-speaking countries, relevant actors in this arena must supplement their native-language (L1) competencies with foreign-language (L2) skills. In other words, if internationalisation in Argentina and Latin America is to transcend intra-regional boundaries, students, teachers, and researchers must be given the chance to develop bilingual skills, in general, and English-language competencies, in particular. It is thus critical for those stakeholders to become aware of the (proven and probable) benefits of acquiring specific skills in English as L2 (EL2), so that institutional IHE projects are supported by converging personal motivations.

It should be noted that, in the contemporary literature, bilingualism is no longer considered an exclusive attribute of individuals who reach "native-like command of two languages" (Bloomfield 1935: 56). Rather, the term 'bilingual' refers to those who use two (or more) languages in their daily lives and who develop skills in them according to their needs (Grosjean, 1999). Under this definition, over 50% of the world's population can be regarded as bilingual (Grosjean, 1994). In fact, a survey conducted in the European Union revealed that, at the beginning of the 21st century, 56% of the population were able to converse in an L2 (European Commission, 2006).

Of course, such a broad definition encompasses various cognitive, social, and cultural profiles, so that different types of bilingualism must be recognised (García, Manóiloff & Wagner, 2016). As shown in Figure 1, a distinction can be made between circumstantial and elective bilinguals (depending on whether they have deliberately chosen to learn an L2); folk and elite bilinguals (depending on the perceived prestige of their L1 in the community); monocultural and bicultural bilinguals (depending on how deeply they have assimilated the practices regulating the L2-based contexts); early (simultaneous or sequential) and late bilinguals (depending on when they incorporated the L2 in their life cycle); balanced and unbalanced bilinguals (depending on their relative skills in L1 and L2); incipient bilinguals and ambilinguals (depending on attained proficiency, with several intermediate levels); active and latent bilinguals (depending on the frequency of use of their L2); additive and subtractive bilinguals (depending on the frequency with which L1 is used once the L2 is incorporated); receptive and productive bilinguals (depending on the language modalities employed daily); and compound, coordinate or subordinate bilinguals (depending on their languages' cognitive interdependencies). For further details on these categories, see the works mentioned in Figure 1 or refer to the summary provided by García, Manóiloff & Wagner (2016).

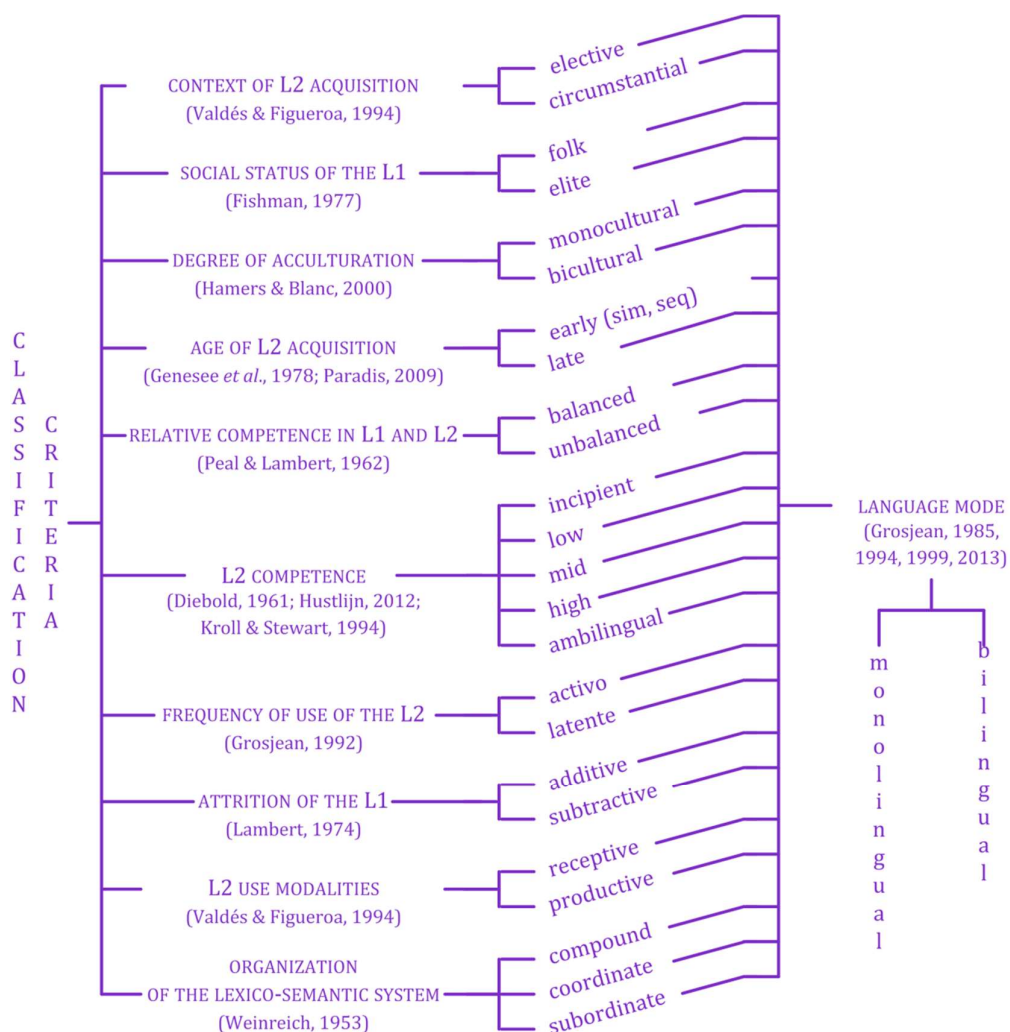


Figure 1. Criteria and categories to classify bilingual (sub)populations. Adapted from García, Manoilloff & Wagner (2016).

Beyond this heterogeneity, and despite the existence of roughly 7,000 living languages (Gordon, 2005), the global bilingual landscape is dominated by one L2 in particular: English. For every two native speakers of English, there are three people who use it daily as L2 (Lewis et al., 2014). Moreover, the number of people with at least minimal functional skills in English would exceed 1.7 billion (British Council, 2013). Thus, English stands firm as the *lingua franca* of modern society (Baker & Prys Jones, 1998; Crystal, 2003) –a noteworthy phenomenon, since bilingualism has become the “backbone of the global and virtual economy” (Day & Wagner, 2009: 392).

Given the prevalence and ubiquity of EL2, its systematic use in academic settings is a central element for IHE in Argentina and the region. First, no language offers as many opportunities as English to promote outward international student mobility. Second, academic offerings in this language can maximise the inflow of students from other countries. Third, the main scientific journals worldwide publish exclusively in English, so that knowledge of this language proves essential to keep track of progress across disciplines and promote the global dissemination of local intellectual production.

However, unlike other parts of the world (Dearden, 2014), Argentina and the region have not yet achieved an active involvement of institutions and decision makers in local projects promoting the systematic incorporation of English in higher education. This is partly due to the limited awareness of the benefits such projects would entail (at institutional, productive, and neurocognitive levels) and the considerable absence of evidence-based proposals for action. Therefore, it is vital to develop intrinsic and extrinsic motivation among students, teachers, and researchers (and, at more generally, among institutional authorities) regarding the importance of fostering EL2 in academic settings, while boosting IHE as a whole. In this vein, the present report addresses the benefits of a programme aimed at developing competencies and services in English across national and regional spheres.

In particular, we consider three theoretical and empirical dimensions underpinning the initiative of the British Council in Argentina, each inspiring specific lines of action. First, from an educational perspective, we consider the importance of incorporating English as a medium of instruction (EMI) to expand the global appeal and dissemination of local academic offerings. Second, in relation to scientific publications, we discuss the role of English as a key resource to internationalise the region's intellectual production. Finally, we review research on the possible neurocognitive benefits of bilingualism. In short, this paper relies on scientific evidence to explain the immediate and medium-term benefits of systematising EL2 as a precondition to expand IHE in the local context.

2. The Educational Dimension



IHE requires developing a broad local educational offer in English. This responds to the need of attracting more students who speak English as L1, of course, but it can also help attract international students who rely on EL2 to study outside their home country. In fact, as mentioned above, English is the most widespread language in the world and most of its users are non-native speakers. Incorporating English into the classroom in Latin American institutions (perhaps as a supplement to lessons in

Spanish) is a fundamental, if not imperative, step for IHE to reach its maximum scope and impact.

In other words, EMI represents a key pillar to internationalise academic offerings and expand the number of foreign students. By encouraging the use of EL2 among teachers, or supplementing their (face-to-face or virtual) classes in L1 with translation services, the local appeal and the global dissemination of Argentine and Latin American teaching could increase. Below we review current knowledge about this educational modality in higher education contexts.

2.1. The Role of EMI in IHE

EMI refers to the use of English to teach specific contents in countries or jurisdictions where English is not the majority language (Dearden, 2014). This is a growing global trend, especially in higher education contexts (Smit, 2010; Wachter & Maiworm, 2014) and, more so, in the case of postgraduate university degrees (Dearden, 2014; Earls 2016). Thus, both in theory and in practice, EMI has become a stronghold for IHE the world over.

The growth of EMI in higher education institutions responds to the symbolic and material benefits it involves in the short and the medium term. A review of studies on this phenomenon (Macaro, Curle et al., 2017) indicates that IHE, anchored in EMI, grants universities more prestige, helps offset national budget cuts (thanks to the financing provided by foreign students), improves the competitiveness of public institutions versus private institutions, narrows the linguistic gap between study and examination materials (since many specialised texts are published only in English, but their mediation and assessment are usually conducted in the dominant L1), and maximises local scientific production in English (see Section 3). In addition, the systematic incorporation of EMI-based courses increases the interest of international students (Di Paolo & Tansel, 2015; Selvi, 2014) and, in a broader sense, gives rise to cultural cooperation and opportunities for student exchange (Crystal, 1997). It has also been noted that EMI offers opportunities to improve EL2 skills in non-English speaking students (both local and

international) (Bozdođan & Karlıdağ, 2013; Chapple, 2015), which could result in a virtuous circle of institutional benefits and individual advantages (see Section 4).

In addition, EMI is a strategic response to the current student mobility scenario. The UNESCO Institute of Statistics (2015) estimated that, 15 years into the 21st century, the number of people studying outside their home country was almost five million, which doubles the figure recorded at the beginning of the century. Thus, given the *lingua franca* status of English, the consolidation of a curriculum taught in English becomes a centre of attraction for a growing population of foreign students.

One of the problems posed by EMI is that it might undermine content accessibility for local students. Indeed, some studies suggest lower levels of comprehension among students attending EMI-based courses (Hellekjaer, 2010; Vinke, 1995). However, other reports found no difference between the degree of comprehension achieved in classes taught in L1 and those based on EMI (Joe & Lee, 2013), or among the final grades obtained by students (Dafouz et al., 2014; Tatzl & Messnarz, 2013), even in Spanish-speaking contexts (Dafouz et al., 2014).

Despite their methodological limitations, these studies seem to suggest that, given a minimum level of EL2 competence, even non-English speaking students can successfully access contents in English (Webb, 2004). It is not surprising, therefore, that performance in EMI-based courses positively correlates with students' proficiency in English (Kang & Park, 2005; Kim et al., 2014). Furthermore, non-English speaking students have been shown to quickly develop cognitive (e.g., translation) and interpersonal (e.g., peer consultation) strategies to address possible language difficulties (Evans & Morrisson, 2011; García, 2009; Moll, 2007; Van der Walt & Dornbrack, 2011).

Of course, the assessment of EL2 skills is an important element to determine the feasibility and impact of EMI in the region. Fortunately, there are several formal resources in place to implement this process. For example, the innovative APTIS test, developed by British Council experts, involves a modular assessment of the four language macro skills (oral and written production, reading and listening comprehension), as well as various grammar and lexical aspects, to certify English levels A2, B1, B2, and C following the Common European Framework of Reference for Languages (British Council, 2018). Also relevant is the IELTS exam, jointly developed by the British Council, IDP Australia, and Cambridge Assessment English, internationally recognised by thousands of institutions around the world (Cambridge Assessment English, 2018). More focused assessments can also be performed, anchored in courses of English for special purposes. These tools guarantee an accurate and objective monitoring of EL2 skills across teachers, students, and researchers involved in IHE initiatives.

Circumstances in Argentina seem particularly favourable to boost IHE through EMI. According to recent official figures, Argentina has 15 of the 1,000 best universities in the world –including the University of Buenos Aires, ranked among the top 75 (Quaquarelli Symonds, 2018). Moreover, the appeal of Argentina for foreign students is even greater due to relevant bilateral agreements. For example, under an agreement on mutual recognition of university degrees signed between the Argentine and UK governments in 2018, any student with a Master's Degree from an Argentine university will be able to pursue a PhD in a British university, and vice versa (gov.uk, 2018). EMI is thus particularly strategic in this institutional context.

However, the major challenge posed by EMI concerns the teachers' level of English. The dominant perception across countries and continents is that teachers are not qualified enough to teach in EL2 (Dearden, 2014). In addition, only a few countries (e.g., Spain, the Netherlands, Indonesia, Nepal, Pakistan, Czech Republic, Taiwan) seem to have clear and detailed tutorials about how to use EMI in the classroom (Dearden, 2014). It should be noted, though, that there are no quantitative data on the structure or impact of preparatory courses to use EMI in higher education (Macaro et al., 2017). In any case, testimonies obtained at the end of EMI training courses in Italy (Guarda & Helm, 2016), Sweden (Airey, 2011), and Spain (Aguilar & Rodriguez, 2012) indicate that teachers are motivated to develop the necessary skills if this improves their general communication skills in EL2 and strengthens their promotion applications – as indeed is the case in various parts of the world. Moreover, such courses may change the teachers' perception about EMI itself, by expanding their capacity to interact with students and support their needs (Guarda & Helm, 2016).

Of course, EMI-based proposals can be consolidated even when teachers do not possess a high level of EL2. An alternative is to offer simultaneous interpretation services, although the costs may well be prohibitive for most institutions. A more feasible option (involving several additional benefits) is to video record classes in L1 and have them captioned or dubbed into English. This task may be commissioned to professional translators or even performed in a partially automated fashion via free speech-to-text tools supplemented with post-editing services. Either way, producing these materials would favour IHE by fostering foreign student mobility while opening global avenues through massive online courses (MOOCs).

MOOCs are a vital tool for IHE in the digital era. MOOCs are online educational platforms, typically offering open access to previously recorded lessons (either in their original language or supported by dubbing or subtitling), with a follow-up system through forums or tutoring, and self-scoring or peer feedback examinations (Literat, 2015). While MOOCs do not constitute classes *stricto sensu* (Literat, 2015), they do represent a valuable information dissemination system. One of the main virtues of this resource is its scalability, as an initial effort and investment allows broadcasting the same lesson for several years to an indefinite number of students (Literat, 2015).

Much like EMI as a whole, MOOCs have experienced considerable growth in recent years. This follows from different higher education trends, such as the growing demand for specific courses; greater access to digital technologies; and the need for affordable, scalable, and profitable educational models (Literat, 2015). While most offerings come from English-speaking countries, several higher education institutions in Argentina and Latin America already have the necessary infrastructure to actively enter this market. In this sense, as the vast majority of MOOC participants come from English-speaking countries, as well as from Europe (Liyaganawardena et al., 2013), advocating for MOOCs taught in (or translated into) English seems highly advisable for IHE. In particular, hybrid models combining MOOCs with on-site classes or even synchronous online workshops become particularly helpful didactic and pedagogical alternatives (Literat, 2015).

The potential for these courses to encourage IHE is invaluable –indeed, IHE is the main reason why MOOC teachers adopt this modality (Kolowich, 2013). Consider, for instance, the MOOC "Introduction to Artificial Intelligence", launched in 2011 through the Udacity platform. In its first

edition, the course had 160,000 students enrolled, 23,000 of whom completed the course. This figure surpasses the cumulative number of students from all on-site artificial intelligence courses in the world (Shirky, 2012). Furthermore, some of the most popular MOOCs worldwide have been designed in the UK. According to data from the Online Course Report (2017), these include "Exploring English: Language and Culture" (from the British Council, with more than 300,000 students), "Introduction to Philosophy" (from the University of Edinburgh, with over 550,000 students), and "Understanding IELTS: Techniques for English Language Tests" (from the British Council, with more than 690,000 students). In addition, note that these courses have an additional appeal since they include initiatives to grant official credits for completion, as is already the case at several renowned universities (Literat, 2015).

2.2. Proposed Actions

Based on the considerations above, at least three proposals for action emerge with a view to maximising IHE in Argentina and the region.

- **Awareness-Raising Sessions involving authorities in Higher Education Institutions and Ministries of Education.** A systematic review of 83 studies (Macaro, Curle et al., 2017) indicates that the growth of EMI in higher education depends more on top-down policies than on bottom-up initiatives by students and teachers. The organisation of meetings with specialists, aimed at public and institutional policy decision-makers, is a direct strategy for disseminating the need to maximise EMI among local teachers and promote the allocation of funds and infrastructure to that end.
- **EL2 Courses for Teachers.** EL2 courses focused on the needs of teachers are another key tool to increase the local faculty capable of attracting international students. In particular, a strategic decision could be made to grant credits or symbolic incentives to teachers that complete these courses and incorporate EMI in their academic programmes.
- **Recording of Classes and Online Platform Development.** As attested by several universities in the United Kingdom and elsewhere, platforms could be developed to host MOOCs by local teachers. These could be based on classes either directly taught in EL2 or supported with dubbing or subtitling to disseminate material originally produced in L1. In this sense, it would be helpful to sign agreements with translation and interpreting training institutions (or professional associations in these areas) to develop mutually-beneficial internship or student exchange specialisation programmes.

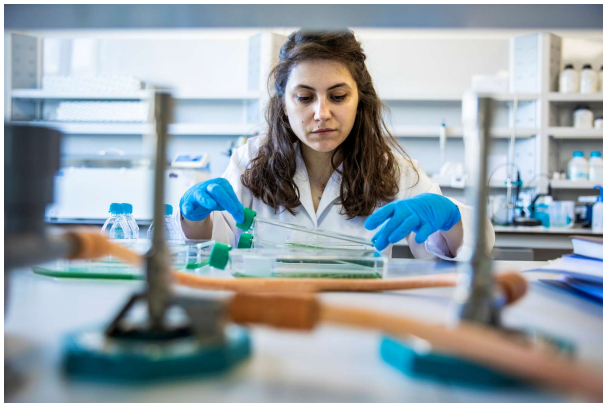


3. The Scientific Dimension

Another pillar of higher education is knowledge production and dissemination. This is a premise that cuts across disciplines, irrespective of whether they belong within the social or the natural sciences. In addition, scientific publication is a requirement to access postgraduate degrees, teaching, and research positions, and, more broadly, to advance professionally in university settings.

In the current context, this aspect of academic life can only be internationalised by developing academic writing skills in EL2. As we shall see, this skill is not only desirable; rather, it has become a growing, if not imperative, need. This is another key niche that justifies maximising specific bilingual skills.

3.1. English, a Strategic Commitment to Scientific Development



Universities' prestige and funding depend, to a large extent, on the international impact of their publications. Part of the success of such institutions is thus linked to their members' mastery of certain skills in EL2. Current science can achieve maximum visibility only when it is disseminated in English, which has also become the *lingua franca* of contemporary science (Garfield, 1989; Di Bitetti & Ferreras, 2017). For example, in the natural sciences, more than 90% of indexed scientific articles are published in

English (Ammon 2010, 2012; Hamel, 2007). A similar percentage has been documented in the social sciences (Albarillo, 2014), as shown in Figure 2.

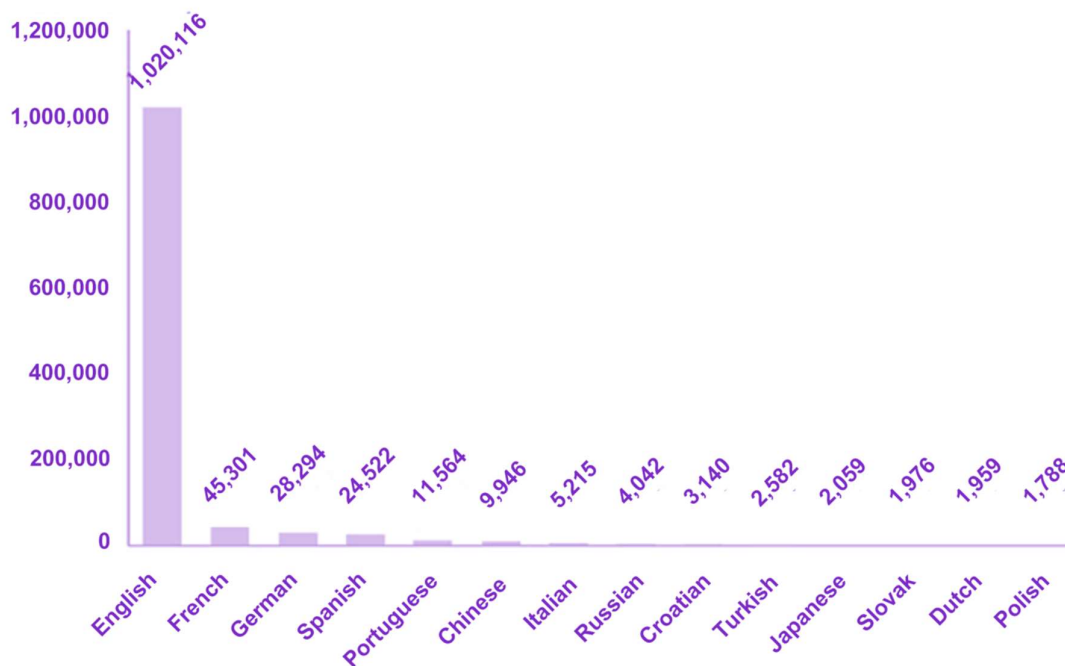


Figure 2. Number of articles by language in indexed journals in the social sciences. Data from an analysis of studies gleaned through the Scopus database between 1996 and 2012. Authorised reproduction, with modifications, by Albarillo, F. (2014). "Language in Social Science Databases: English versus non-English Articles in JSTOR & Scopus". *Behavioral & Social Sciences Librarian* 33(2): 77-90.

This disparity responds to complex social, cultural, and economic circumstances that confer more prestige to works published in English-language journals, both in the minds of the researchers and the media (Montgomery, 2013). The prevalence of English itself in the world would be, of course, one of these circumstances, although other objective phenomena are also involved, such as the lower impact of journals published in other languages (Matías-Guiu & García-Ramos, 2011).

Given this situation, Argentine and Latin American scientific production is at a disadvantage. Research from non-English speaking countries has less impact than that from English-speaking countries, regardless of the language in which it is produced (Grégoire et al., 1995; Jiménez-Contreras et al., 2002). In addition, this production is considerably less visible. Forty years ago, Garfield (1978) showed that articles in English were about 250% more frequently cited than those written in French, and the same trend was observed for works in German, Russian, and Spanish. This pattern continues today, with some additional nuances. For instance, as shown in Figure 3 (for the particular case of physics), with the passing of time, articles in English increase their citations considerably, whereas this is not the case for works published in other languages (Liang, Rousseau et al., 2013). Something similar occurs in the human sciences. An analysis of more than 16,000 citations in prestigious journals on historiography, literature, linguistics, and philosophy shows that almost 80% of the works cited are written in English (Kellsey & Knievel, 2004). In addition, almost half of the meta-analyses published in scientific literature exclude, by design, all works not published in English, even if they are included in indexed journals (Matías-Guiu & García-Ramos, 2011).

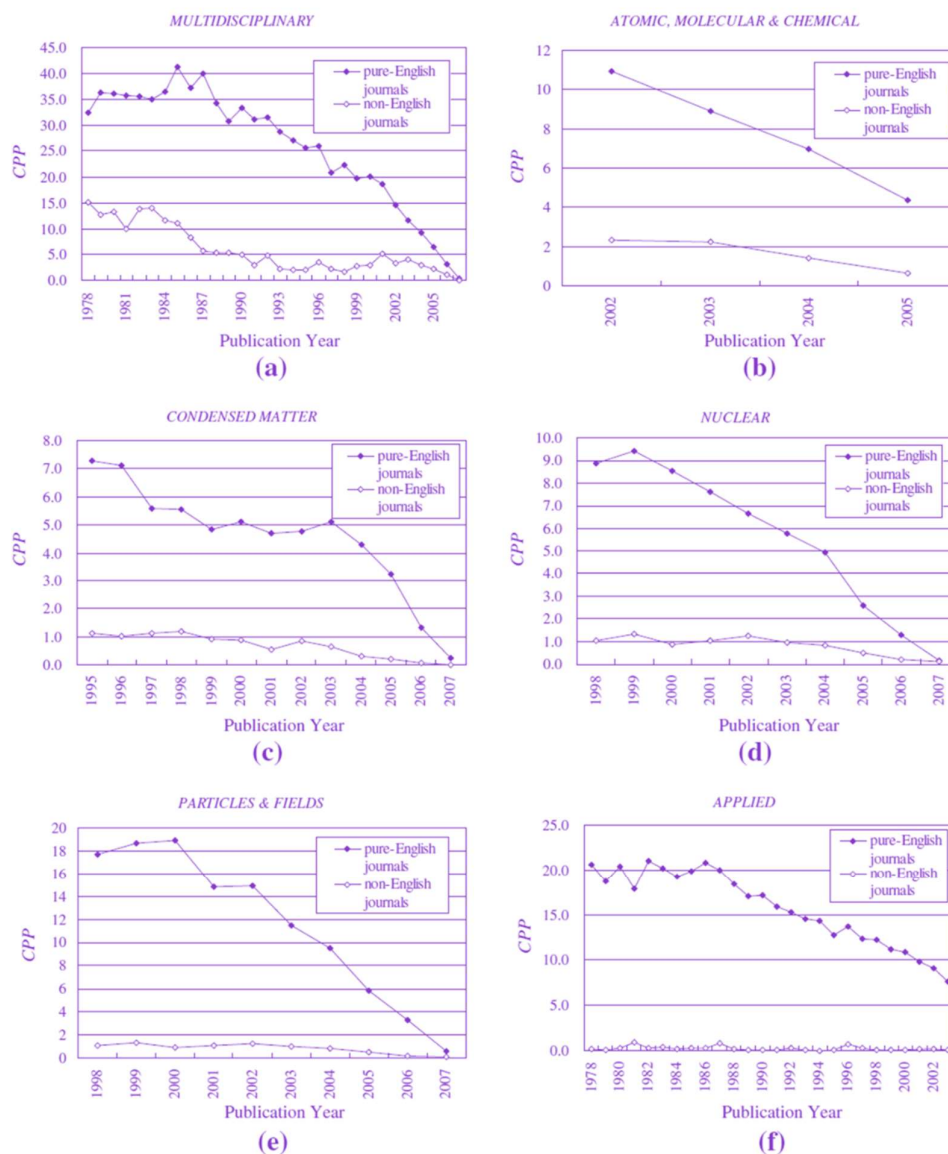


Figure 3. Citations by publication in indexed scientific journals specialised in physics, according to the language of publication. The figure shows this trend for (a) multidisciplinary or targeted journals in (b) atomic, molecular, and chemical physics, (c) condensed matter physics, (d) nuclear physics, (e) particles and fields physics, and (f) applied physics. CPP: citations per publication. Authorised reproduction, with modifications, by Liang, L., R. Rousseau & Z. Zhong (2013). "Non-English Journals and Papers in Physics and Chemistry: Bias in Citations?" *Scientometrics* 95(1): 333-350.

Furthermore, a bibliometric analysis of indexed articles from leading journals shows that the situation is even more inequitable for Argentina and the region: when the list of authors is comprised exclusively of researchers from Latin American institutes, works are considerably less frequently cited than those with partial or total presence of authors based in developed countries (Meneghini, Packer et al., 2008). The importance of English is also confirmed when we consider the scientific production from Brazil, the country with the most publications in the

region. Until 2007, approximately 18,000 of the 50,000 articles generated annually by this country were indexed in the Web of Science. However, within this significant group, less than 500 were written in Portuguese (Meneghini & Packer, 2007).

Therefore, the internationalisation of intellectual production in higher education requires promoting scientific writing skills in English. Moreover, given the aforementioned disadvantages and biases, these skills need to be honed to levels of excellence. In fact, linguistic errors and the use of stylistic patterns other than those ruling scientific writing in English lead to biased evaluations (Drubin & Kellogg, 2012) and direct rejection (Meneghini & Packer, 2007) by peer reviewers. Thus, knowledge that is not conveyed following the conventions of scientific English runs the risk of becoming invisible. The importance of this point, it should be noted, goes far beyond the individual success of researchers and the recognition of the institutions where they work. For example, although the causal relationship between smoking and lung cancer had already been documented in German scientific journals in the 1930s, this finding did not have any influence on the development of public policies (e.g., prevention campaigns) until 1960, when the relationship was again documented in English-language journals (Proctor, 1999). In this vein, EL2 writing skills become a critical element for scientific and human progress. Beyond personal ideological positions, it seems strategic to proactively acknowledge English as the dominant language in the production and dissemination of expert knowledge.

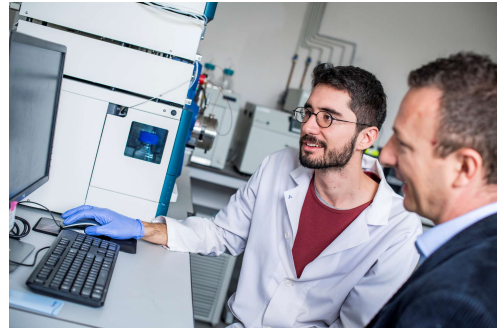
In summary, scientific production in higher education environments is unlikely to gain international status unless skilfully written in EL2. These skills are essential for researchers to gain worldwide visibility (Meneghini & Packer, 2007), increase their opportunities of being accepted in doctoral programmes or academic positions (Dean et al., 2015), and augment their chance of success when applying for external funding (Drubin & Kellogg, 2012). Once again, the necessary skills for such purposes should be not merely developed, but ideally optimised. Indeed, the level of proficiency in English is a strong indicator of the probability of being published in leading journals –in medicine, for example, this is more important than the total money invested in research (Man et al., 2004). This has also been documented for the Latin American context: among Brazilian researchers, for example, those with good writing skills in EL2 outperform less linguistically competent peers in terms of number of publications, accumulated citations, and other indicators of scientific relevance (Vasconcelos et al., 2008).

It should be noted here that mastering English is not equivalent to mastering its use in scientific texts. The scientific genre relies on special stylistic features, a predefined structure, an emphasis on brevity, clarity, and accuracy (Day, 1998; Kirkman, 2005; Lebrun, 2007; Matthews & Matthews, 2008; Blackwell & Martin, 2011). Fortunately, the conventional nature of the scientific style allows for the identification of the most effective writing procedures at different stages of the process, from the overall organisation of the paper to the formal aspects of the text, including the distribution of information in paragraphs and sentences, the formulation of concise syntactic structures, and the consolidation of effective terminological habits. It is therefore possible to formalise efficient procedures in specialised courses that build upon researchers' general EL2 knowledge to strengthen specific skills in order to generate high-quality papers, worthy of publication in the world's leading journals. In fact, both graduate students and their thesis supervisors highlight the importance and benefits of specific training to improve their skills in this area (Dean et al., 2015).

3.2. Proposed Actions

The points mentioned above lead to two concrete actions to boost IHE, in its scientific and productive dimension, both at the national and regional level.

- **Discussion Panels to Raise Awareness about the Visibility of Science According to the Language employed in academic writing.** As proposed in the previous section, a first step would be to raise specific awareness among the higher education community (and, particularly, among the relevant education authorities and political stakeholders) regarding the need to enhance scientific writing skills in EL2 to increase the international visibility of academic production in their institutions.
- **Workshops on Scientific Writing in English.** More specifically, it would be strategic to organise highly specialised workshops for researchers with knowledge of EL2, so that they can learn and master the distinctive techniques of scientific writing in English.



4. The Neurocognitive Dimension

A less obvious reason (due to lack of scientific dissemination) to encourage the development of EL2 as a requirement for IHE is that this process could improve different cognitive functions and even favour mental health in ageing. This is a promising line for students, teachers, and researchers to personally commit to the development of skills in English and, in parallel, lay the foundations for a broader internationalisation of the educational system.

4.1. The (Possible) Neurocognitive Benefits of Bilingualism

It is widely acknowledged that skills exercised regularly over time have a deep impact on our brains. For example, professional taxi drivers have greater grey matter density in key regions underlying spatial navigation skills (Maguire, Gadian et al., 2000). Similarly, experienced tango dancers show more neurocognitive efficiency in mechanisms that underlie the detection of errors during interactive physical movements (Amoruso Sedeño et al., 2014; Amoruso, Ibáñez et al., 2016). This evidence indicates that the human brain can adapt its functionality according to day-to-day demands.

The bilingual experience is yet another factor that may lead to neurocognitive reconfigurations (Bialystok, 2017). The general hypothesis is that knowledge of two languages forces the brain to optimise specific mechanisms of attention and cognitive control (Figure 4) to avoid unwarranted interference of one language while the other is being used.

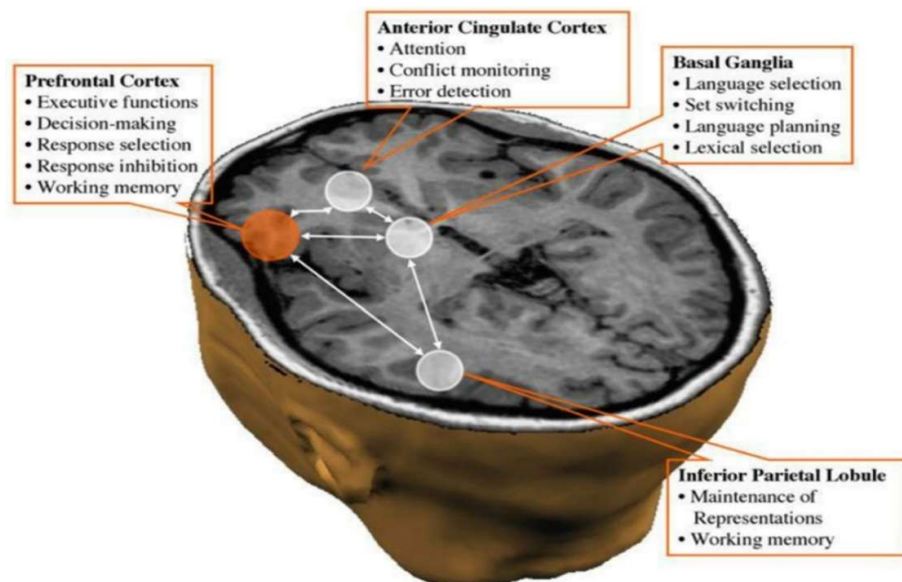


Figure 4. Brain regions involved in bilingual cognitive control. Authorised reproduction, with modifications, by Abutalebi, J. & D. Green (2007). "Bilingual language production: The neurocognition of language representation & control". *Journal of Neurolinguistics* 20(3): 242-275.

Because they are under constant demand, such mechanisms would be strengthened in bilingual people –as is the case with the muscles of a bodybuilder. Moreover, as language is pervasive in our lives (Bialystok, 2017), and given its dependence on neural networks distributed throughout our brain (Friederici, 2011), these effects would go beyond linguistic processes and could manifest in any task involving attention and cognitive control processes.

To test this hypothesis, the general strategy is to take a group of bilinguals and another group of monolinguals with similar social and demographic characteristics, and compare their brains or their performance in relevant cognitive tasks. Several studies have shown that bilingual people would have a special neuroanatomical profile, with higher grey matter density in structures associated with cognitive control processes (such as the inferior parietal lobule and the cerebellum) (Figure 5A), more white matter integrity in tracts connecting frontal regions with occipital and temporal areas, and others interconnecting both hemispheres (García-Penton, Fernández García et al., 2016) (Figure 5B).

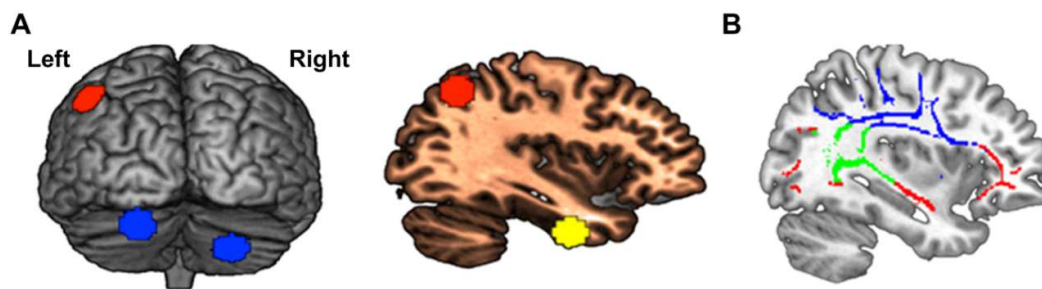


Figure 5. Anatomical changes associated with bilingualism. The figure shows differences between bilingual and monolingual individuals in regions and tracts involved in different cognitive control functions. (A) Rear view: areas showing greater volume of grey matter in bilingual than in monolingual individuals; Red: posterior parietal lobule; Blue: cerebellum; Yellow: anterior lower temporal lobule. (B) Sagittal view: tracts showing significant differences in fractional anisotropy between monolingual and bilingual individuals; Green: corpus callosum; Red: lower front occipital fascicle; Blue: upper longitudinal fascicle. Authorised reproduction, with modifications, by García-Penton, L., Y. Fernández García, B. Costello, J. A. Duñabeitia & M. Carreiras (2016). "The Neuroanatomy of Bilingualism: How to Turn a Hazy View into the Full Picture". *Language, Cognition & Neuroscience* 31(3): 303-327.

These changes may even occur after brief periods of L2 study (Li, Legault et al., 2014). For example, grey matter density in the inferior parietal cortex, which plays a key role in verbal and executive processes, increases in proportion to bilingual skills (Mechelli, Crinion et al., 2004), even after only five months of lessons (Stein, Federspiel et al., 2012). In addition, white matter integrity in frontal and temporal regions of both hemispheres shows significant changes after nine months of L2 study (Schlegel, Rudelson et al., 2012).

Compatibly, bilingualism seems to be associated with increased ability in certain cognitive tasks. Bilingual children develop attentional capacity and cognitive flexibility earlier than their monolingual peers (Bialystok, 2017). For example, they perform better when asked to combine 2D cards (e.g., images of different objects with different colours) in terms of one dimension (colour) and then in terms of another (form) (Carlson & Meltzoff, 2008; Kalashnikova & Mattock, 2014), or when faced with ambiguous images (e.g., bistable images that could be perceived as either a duck or a rabbit) and asked to change their interpretation (Bialystok & Shapero, 2005; Wimmer & Marx, 2014). This suggests greater capacity to change their active mental schemata.

Cognitive advantages have also been documented in bilingual adults. The first study in this respect (Bialystok, Craik et al., 2004) used the Simon task, where red and blue images are presented to the right or to the left of the screen and participants have to press a left key if the image is blue or a right key if the image is red, regardless of where the images are displayed (Figure 6A). The natural tendency is to press the left key whenever an image is displayed on the left hand side of the screen (and vice versa); however, when the image on the left is red, that tendency should be suppressed, which requires good inhibitory control. Bialystok, Craik et al. (2004) reported significant advantages for bilingual adults and elderly individuals in this task (Figure 6B).

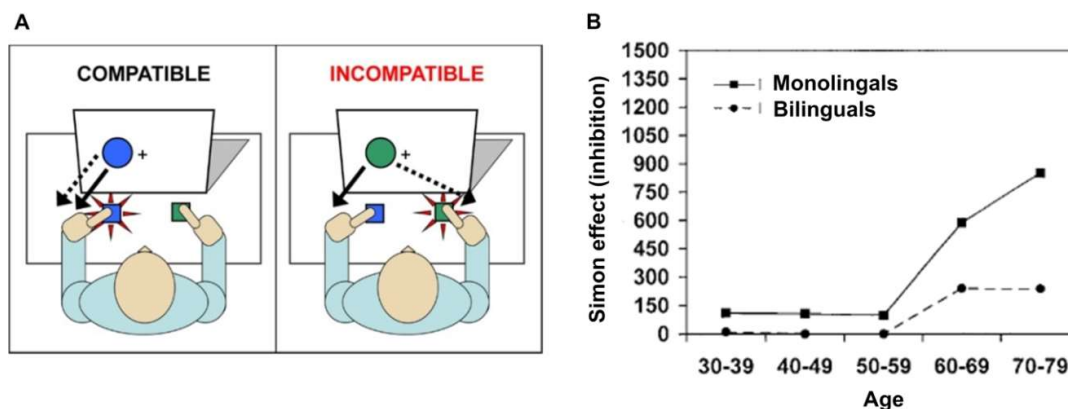


Figure 6. Effects of bilingualism on the inhibitory control. (A) Schematic representation of the Simon task. (B) Inhibitory costs (Simon effect) for bilingual and monolingual individuals, calculated based on the average difference of reaction times for compatible and incompatible conditions. Panel B: authorised reproduction, with modifications, by Bialystok, E., F. I. Craik, R. Klein & M. Viswanathan (2004). "Bilingualism, aging, and cognitive control: "Evidence from the Simon task". *Psychology of Aging* 19(2): 290-303.

Bilingual advantages have also been reported in attentional processes. For instance, in the attentional network task, participants must provide a response to the left or to the right depending on the orientation of the target stimulus presented along with facilitating (congruent), distracting (incongruent), and neutral stimuli (Figure 7A). Bilingual individuals respond more quickly and show less interference to incongruent stimuli (Costa, Hernández et al., 2008) – Figure 7B. In fact, this effect has been replicated in young adults from different countries and cultures (Bialystok, Craik et al., 2008; Bialystok, 2017).

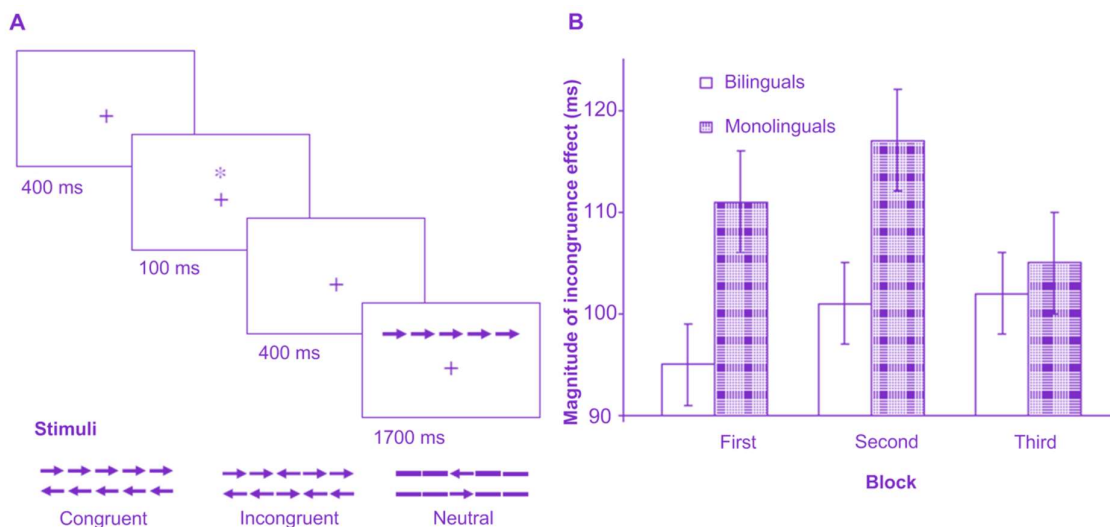


Figure 7. Effects of bilingualism on attentional processes. (A) Schematic representation of a congruent test during the attentional network task. (B) Magnitude of conflict effect for each group and each block. Error bars represent the standard error. Authorised reproduction, with modifications, by Costa, A., M. Hernandez & N. Sebastian-Galles (2008). "Bilingualism Aids Conflict Resolution: Evidence from the ANT Task". *Cognition* 106(1): 59-86.

In addition, bilingual individuals show advantages in certain aspects of their working memory. For example, they outperform monolinguals when prompted to remember increasingly longer lists of numbers. Furthermore, this effect increases in proportion to the subjects' L2 competence (Linck, Osthus et al., 2014). Other studies also show that performance in different domains improves as L2 skills increase. This has been observed, for example, in the case of attentional (Bosma, Hoekstra et al., 2017) and inhibitory functions (Goral, Campanelli et al., 2015), as well as executive capabilities in general (Thomas-Sunesson, Hakuta et al., 2018).

Moreover, different cognitive functions benefit from the intense and sustained development of particular bilingual activities in youth and adults. For example, two or three semesters of training in simultaneous interpreting¹ may increase cortical thickness in temporal, parietal, and frontal regions subserving various executive functions (Hervais-Adelman, Moser-Mercer et al., 2017), as well as structural connectivity among several of these circuits (Van de Putte, De Baene et al., 2018). These effects are accompanied by significantly better results in tasks that evaluate categorisation (Bajo, Padilla et al., 2000), cognitive flexibility (Dong & Xie, 2014), and memory (Kopke & Nespoulous, 2006; Tzou, Eslami et al., 2012; Dong & Lin, 2013; Chmiel, 2018) skills. Therefore, it would seem that the greater the demands placed on different bilingual domains, the greater the entrenchment of such skills (García, 2014).

Finally, a promising line of research suggests that the bilingual experience may favor cognitive reserve, i.e., the brain's resilience or functional compensation during ageing, both normal and

¹ Simultaneous interpretation is a translation modality in which spoken utterances in one language must be understood and immediately reformulated in another language. Most of the time the interpreter is, therefore, producing utterances in the target language while processing new input in the source language (Chernov, 2004).

pathological (Stern 2009, 2012). It has been suggested that bilingualism could delay the onset of symptoms of Alzheimer's disease and mild cognitive impairment by several years (Alladi et al., 2013; Bialystok et al. 2007, 2014; Craik et al., 2010; Woumans et al., 2015). In this vein, Kowoll, Degen et al. (2015) have shown that bilingual and monolingual patients can maintain comparable cognitive performance comparable even when the former present greater atrophy in frontotemporal, parietal and cerebellar regions supporting linguistic, mnemonic, and cognitive control processes.

It should be acknowledged, however, that the evidence is not entirely systematic. The neuroanatomical differences between bilingual and monolingual individuals vary greatly from study to study (García-Penton, Fernández García et al., 2016), and several researchers have not found differences between such populations in certain cognitive functions (Paap, Johnson et al., 2015, 2016). In turn, the benefits associated with simultaneous interpretation are restricted to the most characteristic cognitive functions of this activity (García et al. 2019).

Ultimately, although the specific conditions that would trigger these benefits are not entirely known, at least certain forms of the bilingual experience apparently result in lasting neurocognitive benefits. Admittedly, the evidence is not fully systematic, but there is substantial and growing confirmatory data. Furthermore, to date, there is no indication that bilingualism implies executive disadvantages of any kind. Therefore, developing bilingualism seems a safe bet: at best, substantial improvements are predicted in certain psychobiological capabilities; and, at worst, even if these advantages do not appear, students' communication and professional skills will have been developed (as argued in Sections 2 and 3).

4.2. Lines of Action

Given that bilingualism is a basic element of IHE, this empirical corpus constitutes fundamental input for key stakeholders to commit to such a process. In particular, since the development of EL2 competences is key for internationalisation of the academic system, participating in relevant initiatives might involve secondary but significant benefits for the cognitive capabilities and mental health of the actors involved. This can be achieved through specific EL2 courses or immersion educational experiences abroad. To disseminate this knowledge, raise decision makers' awareness of the ensuing benefits and, eventually, increase their motivation to participate in IHE projects, we propose a set of actions that can be executed in the short and medium term.

- **Lectures and Talks.** A first course of action would be to organise a series of lectures and/or interviews to disseminate the topic. It has been shown that different forms of public dissemination of science, in the media and in public spaces, promote widespread incorporation of relevant findings (Peters, 2013; Ahmed, DeFino et al., 2017) and that scientists' productivity is positively associated with public engagement activities (Peters, 2013). Thus, specialised groups in the country and the region should be approached to

conduct relevant activities. Strategically speaking, these activities should focus on authorities that can allocate human, financial, and infrastructural resources to specific IHE activities and, particularly, EL2 programmes.

- **International Conferences with Experts from British Universities.** Such events are instrumental in bilateral dissemination and awareness-raising activities. A successful IHE project requires, ultimately, a two-way exchange of students, researchers, teachers, and content, which can be promoted by academic events as a starting point.
- **Audio-Visual Documentary.** A more ambitious, though potentially more profitable and scalable, project consists of making a documentary to disseminate this scientific corpus in the local and international context, with emphasis on the role of EL2 as a beneficial resource for cognitive performance and mental health. The author of this report has already drafted a comprehensive proposal to this end, and it has been recently submitted it to the British Council in Argentina for consideration.

5. Closing Remarks

In brief, IHE represents a key challenge for the development of the academic world in Argentina and Latin America. As mentioned before, many pillars of IHE depend on the development of bilingual skills and, specifically, EL2 skills. For the British Council in Argentina's IHE initiative to achieve maximum impact, directors of educational institutions and relevant government authorities should be aware of the problems stemming from the lack of such skills, as well as the benefits involved in acquiring them and the main actions that could be undertaken to this end.

Numerous research studies in sociology, bibliometrics, pedagogy, neuroscience, and cognitive science show that the development of general and specific skills in EL2 could increase the appeal and scope of local teaching, maximise the global visibility of local intellectual production, and even offer psychobiological advantages to students, researchers, and teachers. Thus, the promotion of English in higher education environments becomes a driver of multidimensional benefits.

First, from an educational perspective, EMI is already becoming a growing trend in higher education around the world. This approach furthers institutions' prestige, implies increased funding in foreign currency, promotes the competitiveness of public universities, narrows the gap between study and evaluation materials, and benefits scientific production. In addition, the use of English represents a path towards professional development for teachers without necessarily involving problems of comprehension for students who use it as L2 in their courses. In any case, the adaptation of EMI-based courses to each institutional context can be

objectively assessed through standardised EL2 examinations. Moreover, any possible disadvantage in the latter group could be minimised by designing MOOCs to supplement lessons in Spanish, with English dubbing or subtitling. This strategy in particular, would make local offerings more widely available, with a highly positive cost-benefit ratio. In short, since student mobility is increasing year after year and Latin America represents a highly appealing niche for students from other continents, the evidence reviewed shows the importance of developing an EMI-based or supplemented curricular offering.

Second, the systematic incorporation of EL2 in higher education also represents a strategic move in scientific and editorial terms. English has emerged as the most dominant language in the area of research, both for the natural and social sciences. English-language journals far outweigh journals published in other languages in terms of quantity, quality, visibility, and impact. Therefore, the development of scientific writing skills in English is crucial for the growth and internationalisation of the intellectual work produced in local higher education institutions. This is especially necessary in the regional context, since merely being affiliated to a Latin American institution makes it less likely for a researcher to be cited in future studies. In addition, scientific production in English promotes the international recognition of local researchers, increases their chances of obtaining doctoral or teaching positions, and increases funding opportunities to develop specific research activities. Note, once again, that the level of relevant skills in EL2 is a sensitive predictor of the probability of being published in high-impact journals and that, fortunately, the conventional, pre-structured, and formulaic nature of the scientific style allows for its teaching to be standardised for native and non-native users of English. Acquiring specific skills in English, therefore, also plays a crucial role in the internationalisation of the knowledge generated in higher education institutions.

Finally, by advocating for the development of EL2 skills, teachers, students, and researchers could also enjoy neurocognitive benefits. While the evidence is not entirely consistent, numerous studies indicate that people who systematically use two (or more) languages could have significant psychobiological adaptations. In particular, it would seem that bilingualism may offer advantages related to certain cognitive control functions (such as inhibitory and attentional processes) and that these effects are maximised in proportion to the level of L2 skills or in relation to how frequently different bilingual skills are practised. In addition, it has been suggested that bilingualism could foster cognitive reserve, meaning it could contribute positively to mental health in the elderly. Therefore, the systematic use of EL2 in higher education environments could bring about indirect benefits at a psychobiological level.

It should be noted here that most of the evidence presented comes from young and old adults. Indeed, the studies reviewed on the role of EMI were primarily conducted with university professors and students. In addition, data on the weight of English in scientific publications comes from researchers who are pursuing or have completed their doctoral studies, and the books aimed at developing related skills target precisely this population. Furthermore, most of the findings on the impact of bilingualism on neurocognitive processes come from adult participants (in fact, this is the case for all studies on the effects of interpreting training and all the literature on cognitive reserve). Given that these age groups represent almost all of the teachers, students, and researchers in higher education institutions, the proposals outlined in this paper seem suitable in social and demographic terms.

In light of this information, we have specifically identified seven areas aimed at enhancing IHE through actions that could be implemented in the short term (Figure 8). First, we recommend dissemination and awareness-raising activities on the three dimensions considered. These, as we have seen, include conferences on the role of EMI in IHE (for ministry and university authorities), discussion panels about the role of English as a means to maximise the impact of regional science, and lectures or talks on the psychobiological effects of bilingualism in adulthood. In turn, two types of training activities are proposed to promote further skills in EL2 among teaching staff and specific scientific writing skills in English for trained and in-training researchers. Finally, the production of specific audio-visual material is suggested to expand IHE digitally (e.g., through MOOCs supported with dubbing or subtitling) and to massively disseminate findings on the possible neurocognitive advantages of bilingualism.

	Educational dimension	Scientific-editorial dimension	Neurocognitive dimension	
Dissemination and awareness-raising activities	Symposia for authorities on the role of EMI in IHE	Debates on the role of English in regional scientific production	Conferences and public talks on the psychobiological effects of bilingualism	L i n e s o f
Training activities	EL2 courses for teachers (assessment via standardized tests)	Scientific writing workshops		
Audiovisual development activities	Recording of class and construction of MOOCs (dubbed or subtitled in English)		Original documentary on neurocognitive aspects of bilingualism	

Figure 8. Summary of the lines of action proposed for the education-teaching, scientific-editorial and neurocognitive dimensions. EMI: English as a Medium of Instruction; IHE: Internationalisation of Higher Education; EL2: English as a Foreign Language; MOOCs: Massive Online Courses.

To conclude, there are many reasons for universities in Argentina and Latin America to implement systematic initiatives to maximise IHE. Hundreds of institutions in all continents are already working in this direction and reaping the benefits of such efforts. The British Council in Argentina seeks to support and advise those institutions ready to take the first steps in this regard, through specific, feasible, accessible, scalable, and profitable activities. Rather than an encyclopaedic testimony, therefore, this report can be considered a roadmap for action.

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