



UNIVERSITÀ DEGLI STUDI DI GENOVA
UNIVERSITÀ DEGLI STUDI DI TORINO
Dipartimento di Lingue e Letterature Straniere e Culture Moderne

Dottorato di Ricerca in Digital Humanities
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TESI DI DOTTORATO

The language factor in English-medium instruction (EMI).
The students' language experience in an EMI class in *Medicine and Surgery*

Candidata: Stefania Cicillini
Tutor: Prof.ssa Virginia Pulcini

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Abstract

Over the past decades, an increasing number of institutions in the world has been driven by the need to become more international and attractive in the global scenario. Among the different strategies adopted to respond to the call for the internationalization of higher education, several institutions in non-English speaking countries have begun to offer English-medium instruction (EMI) degree programmes, in which discipline-specific content is delivered through the medium of English (Doiz, Lasagabaster and Sierra, 2011; Wächter and Maiworm, 2014; Valcke, Murphy and Costa, 2017; Macaro, 2018; Pecorari and Malmström, 2018). Although English language outcomes are neither mentioned in the definitions of EMI nor in the courses' syllabi, English proficiency improvement is one of the most common motivating factors to opt for English-mediated education (Costa and Mariotti, 2017; Galloway and Ruegg, 2020). Furthermore, given the amount of language input received by the students in class, some degree of incidental language learning is expected (Aguilar, 2017). However, little research has focused on the students' English proficiency development in EMI classes.

This study aims to address this gap of knowledge by focusing on the students' language experience in an EMI degree programme in *Medicine and Surgery* in Italy. It explores the students' motivations and expectations of the programme and the language gains obtained after two years of English-medium instruction. Therefore, it observes the role played by English in this EMI setting and to what extent English proficiency improvement takes place incidentally, while students are engaged in subject-oriented disciplines.

Since this is a longitudinal study, the data collection was carried out in two academic years and involved one-hundred medical students. Data were collected by means of three questionnaires and two language tests. While questionnaires were used primarily to explore the students' attitudes and opinions on their experience in an English-mediated educational setting, language tests assessed the students' language gains in their receptive skills.

The findings suggest that English plays a key role in EMI and that students have high expectations from their lecturers' English competence and their own language proficiency. In addition, the results of the language tests revealed a statistically significant improvement in the students' reading skills, which according to them took place incidentally. Drawing on these results, this research indicates different actions to be put in place if English proficiency improvement is expected in such programmes, including language goals and more effective language support.

Keywords: English-medium instruction (EMI); English proficiency; language gains; incidental learning.

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Abbreviations

ARWU	Academic Ranking of World Universities
AY	Academic Year
BA	Bachelor of Arts
BBC	British Broadcasting Corporation
CEE	Commission of the European Communities
CEFR	Common European Framework of Reference
CET	College English Test
CLIL	Content and Language Integrated Learning
CRUI	Conference of Italian University Rectors (<i>Conferenza dei Rettori delle Università italiane</i>)
EF	Education First
EFL	English as a Foreign Language
EHEA	European Higher Education Area
EIKEN	Test in Practical English Proficiency
EIL	English as an International Language
ELF	English as a Lingua Franca
EMI	English-medium Instruction
ENL	English as a Native Language
ERE	Emergency Remote Education
ESL	English as a Second Language
ECTS	European Credits Transfer System
ETP	English-taught Programme
FoF	Focus on Form
GATS	General Agreement on Trade in Services
GSE	Global Scale of English
HE	Higher Education
IaH	Internationalization at Home
ICC	Intercultural Communication
ICLHE	Integrating Content and Language in Higher Education
IELTS	International English Language Testing System
IMAT	International Medical Admissions Test
IoC	Internationalization of the Curriculum
L1	First Language
L2	Second Language
MA	Master of Arts
MEXT	Ministry of Education, Culture, Sports, Science and Technology – Japan
MIUR	Italian Ministry of Education, University and Research (<i>Ministero dell'Istruzione, dell'Università e della Ricerca</i>)
MUR	Ministry of University and Research (<i>Ministero dell'Università e della Ricerca</i>)
NATO	North Atlantic Treaty Organization
PhD	Philosophiae Doctor – Doctor of Philosophy

PT1	Pilot Test One
PT2	Pilot Test Two
Q1	Questionnaire One
Q2	Questionnaire Two
Q3	Questionnaire Three
SLA	Second Language Acquisition
SPSS	Statistical Package for the Social Sciences
T1	Test One
T1L	Test One Listening
T1R	Test One Reading
T2	Test Two
T2L	Test Two Listening
T2R	Test Two Reading
TAEC	Transnational Alignment of English Competences for University Lecturers
TAR	Regional Administrative Tribunal
TOEIC	Test of English for International Communication
TOEFL	Test of English as a Foreign Language
TOEPAS	Test of Oral English Proficiency for Academic Staff
UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNITO	University of Torino
US	United States of America
WE	World Englishes

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Introduction

Context and background

Over the past few decades, higher education (HE) has undergone significant changes to respond to the call for internationalization and has become easily accessible to a broader and international audience. In an era of globalization and marketization of education, the need for a common language has grown considerably and has allowed English to rapidly gain the status of **global language**. Its expansion has been mainly driven by the historical, political and economic power of the countries where English is spoken, mainly the United Kingdom and the United States of America. The British Empire has also exerted a strong influence in the diffusion of this language in non-English speaking countries, especially in the former British colonies. Its growing use among Anglophone and non-Anglophone speakers around the world has increased its status of lingua franca (*ELF: English as a Lingua Franca*) and has made English a globally shared medium to communicate. For these reasons, nowadays English is used in several contexts and domains, from science and business to communication and more recently in education for learning, teaching and research purposes (Crystal, 2003; Graddol, 2006; Salomone, 2022).

The different aspects of the English language expansion and of its changing role in society have been the object of many studies which have provided different perspectives and theories of this phenomenon. Several terms have been coined to describe its main features: **World Englishes (WE)**, referring to the varieties of English used throughout the world (Kachru, 1985, 1988; 1992; McArthur, 1987; Graddol, 1997; Modiano, 1999; Mesthrie and Bhatt, 2008; Mair, 2013; Schneider, 2014); **English as an International Language (EIL)**, highlighting its use as a communication medium (Modiano, 1999); **English as a Lingua Franca (ELF)**, used in those contexts where people with different first languages need a common language to communicate (House, 1999; Gnutzmann, 2004; Seidlhofer, 2004, 2011; Jenkins, 2006, 2009; Mauranen, 2006; 2012); **English as a Foreign Language (EFL)**, referring to English language teaching as part of the educational curriculum;

English-medium instruction (EMI), when English is used for instructional purposes, in those settings where English is not the first language of most of the stakeholders involved (Macaro, 2018; Pecorari and Malmström, 2018).

The current internationalization trend of innovating HE has led many institutions in the world to introduce new educational and language policies and institutional strategies as the implementation of EMI degree programmes. As a matter of fact, we have recently witnessed a process of **“Englishization” of higher education** and the establishment of English as the primary language of scientific periodicals, books and the medium of instruction in academic contexts in which English is not the first language of most of the stakeholders involved, e.g., students, lecturers, administrative staff (Dearden, 2015; Macaro, 2018; Pecorari and Malmström, 2018). The introduction and proliferation of EMI courses has increased steadily all over the world, especially at the tertiary level of education, both at undergraduate and postgraduate levels (Phillipson 2012; Wächter and Maiworm, 2014). This peculiar and complex phenomenon, which is of great interest among scholars around the globe, has been given numerous labels and definitions which range from English-medium Instruction (EMI) to Integrating Content and Language in Higher Education (ICLHE) and Content and Language Integrated Learning (CLIL).

The acronym **EMI**, which best frames the present study, is an educational setting, mostly at the tertiary level of education, which consists in the teaching and learning of academic subjects through the medium of English, without a specific focus on the language itself but mainly on the taught content (Tarnopolsky and Goodman, 2012; Dafouz-Milne, Camacho and Urquia, 2014; Macaro 2018; Pecorari and Malmström, 2018). It is generally used in countries where English is not the L1 of most of the citizens (Dearden, 2015; Pecorari and Malmström, 2018; Macaro 2018), meaning that it is a foreign language for most of the people involved. Actually, in 2017 the Eurostat report confirmed that 95% of the European students learned English as a foreign language in upper secondary education. As a matter of fact, a major reason to activate EMI programmes and to enroll in such programmes is to improve the students’ language skills during their academic studies (Tatzl, 2011; Rogier, 2012; Costa and Coleman, 2013; Ackerley, 2017; Brogginini and

Costa, 2017; Galloway and Ruegg, 2020). While some scholars argue that a certain degree of English improvement may take place unconsciously in EMI classes (Tatzl, 2011; Ackerley, 2017; Costa and Mariotti, 2017; Drljača Margić and Vodopija-Krstanović, 2017), little empirical evidence exists of effective language improvement in students attending EMI programmes. For this reason, this is the starting point of this investigation into the role played by English in an EMI medical school in Italy, at the *University of Torino*, and in the medical students' language proficiency. It aims at gaining further insights and understanding of the students' language motivations to study in English, as well as of the challenges encountered and the outcomes achieved during two years of academic studies in English.

Going back to the terminology used in this thesis, the terms **CLIL** and **ICLHE** are often used interchangeably with EMI, even though they generally take place in different contexts and have different aims. The acronym CLIL refers to that educational environment where both content and language are integrated, and their development is part of the curriculum. It does not make reference to any specific foreign language and is mostly used at school level, both in primary and secondary settings (Marsh, 1994; Coyle, Hood and Marsh, 2010; Costa, 2016; Valcke and Wilkinson, 2017). By contrast, ICLHE is usually encountered at university level, as in the case of EMI from which it differs in the language used, which in EMI is always English (Wilkinson and Zegers, 2008; Costa, 2009, 2012; Pulcini and Campagna, 2015).

The growing number of EMI programmes activated all over the world has shed light on the **cost-benefits** of switching to the English-only formula at university level. There is a consensus that EMI brings numerous **benefits** to the institutions and people involved; these have been the object of a growing body of research about their perceptions, attitudes and motivations for opting for English-mediated education (Lei and Hu, 2014; Aguilar, 2017; Dearden, 2015; Pulcini and Campagna, 2015; Galloway, 2017; Galloway, Kriukow and Numajiri, 2017; Macaro, 2018). Among the most positive outcomes there are more mobility and job opportunities, an international environment and the immersion in English-only educational settings, as well as the involvement in wider and diversified networks, and international prestige. Some studies also report positive attitudes towards EMI

for the possibility of improving one's English proficiency while studying subject content. Although the rationale behind the adoption of EMI in higher education is not specifically based on students' language development but on the delivery of specialized content through English (Macaro 2018; Pecorari and Malmström, 2018), the students' immersion in such a special educational environment may enable them to improve their language skills in a natural, authentic and incidental way (Lei and Hu, 2014; Costa, 2016; Aguilar, 2017; Dearden, 2018; Macaro et al. 2018; Galloway and Ruegg, 2020; Rose et al., 2020). Therefore, it may be hypothesized that studying in an EMI environment may lead to some degree of language improvement while learning content in a second language; in that case, that would be an ideal condition for learning content and improving English proficiency incidentally and almost effortlessly and as Macaro et al. (2018) point out, that would be a "(..) win-win situation" (Macaro et al., 2018:37).

Whereas the introduction of EMI programmes may offer several advantages to the institutions and the stakeholders involved, some scholars have also identified possible **issues** and **challenges** posed by EMI. It is argued that it promotes the linguistic predominance of English over local languages, supports monolingualism and may exacerbate social inequalities (Phillipson, 1992, 2006; 2009, 2012; Doiz et al., 2011, 2013). Phillipson (1992) has assumed the development of a new form of 'linguistic imperialism' in which English has a leading role in the communication among people with different L1. Moreover, the massive use of English in several sectors and fields is leading to the domain loss of certain languages, which are losing their specific terminology because of the dominance of a stronger language (Airey, 2004; Hultgren, 2013; Kuteeva and Airey, 2014). Fear of possible domain loss and reduced quality of the content delivered, low rate of international and/or English native speakers staff hired, inadequate teaching training and language support provided are some of the main disadvantages pointed out by EMI scholars (Drljača Margić and Žeželić, 2015; Hultgren, 2016). Possible impoverishment of academic quality due to low levels of English proficiency is also perceived as a drawback of studying in EMI settings (Coleman, 2006; Dafouz-Milne, 2007; Costa and Coleman, 2013; Pulcini, 2015; Drljača Margić and Vodopija-Krstanović, 2017; Clark and Guarda, 2018). This is also the case of some Middle Eastern (Ellili-Cherif

and Alkhateeb, 2015) and Asian HE institutions (Kang and Park, 2005; Cho, 2012; Khan, 2013; Galloway et al., 2017) where the students' low levels of English proficiency are still a major challenge to overcome. As a whole, the added value of EMI really depends on the context, the institution and the stakeholders involved.

Recent years have witnessed significant changes in the educational context, especially after the General Agreement on Trade in Services (GATS) in 1995 and the Bologna Declaration in 1999 were signed. The former fostered the trade of education as a service to be sold and consequently led to the "marketization" of education. The latter, which involved the European Higher Education Area (EHEA), aimed at increasing the international competitiveness of the European educational system on a global scale. The Bologna Declaration, signed by 29 European countries, aimed at developing a European dimension, promoting a standardized educational system, based on a three cycles system (undergraduate, postgraduate and doctorate), establishing the European Credits Transfer System (ETCS) and fostering international mobility (Wilkinson, 2005; De Wit, 2010; Phillipson, 2009; Tilak, 2011). So far, these measures have been gradually introduced in the European academic community and have paved the way to the development of transnational academic cooperation, highly diversified student population and more internationalized universities. As a consequence, EMI has rapidly become an effective response to the call to internationalize the entire higher education system, although its growth is far from being uniform. Indeed, it has gradually led to cultural and political challenges and changes, as for language policies that have been adapted to the local and global needs.

In Europe, **multilingualism** and **plurilingualism** have always been promoted by the European Union even though the massive use of a predominant language, that is English, has recently clashed with some of its fundamental principles. According to Article 2 of the European Cultural Convention, stipulated in Paris in 1954, each European country should encourage the study of its own language and culture and promote multilingualism throughout the continent. As a consequence, language policies should protect and respect linguistic diversity, which is at the core of the European Union's mission. As stated in a report of the European Commission:

“The harmonious co-existence of many languages in Europe is a powerful symbol of the European Union aspiration to be united in diversity” (European Commission 2018:5).

Notwithstanding the EU principles, the predominance of English as a global language and as the lingua franca of international communication has raised questions and concerns among the European countries and stimulated heated debates and criticism among scholars, policy-makers and staff. Among these, the assumption of the “European paradox”, introduced by Phillipson (2006) is worth mentioning, which referred to the existence of contradictory language policies throughout Europe. In other words, it revolved around the contrast between multilingualism and linguistic diversity guaranteed and fostered by the EU and the promotion of English as a global language, which may lead to possible monolingualism in education. To cope with these language issues, some countries, such as the Northern Europe countries, adopted the “Parallel Language Use” policy that encourages the concurrent and parallel use of English and the national languages in Nordic higher education (Airey et al., 2017; Henriksen, Holmen and Kling, 2019).

In Italy, as in many other countries, EMI has been implemented as a top-down decision and as a consequence the provision of EMI programmes in several Italian universities has been imposed without a real interest from the teaching staff, who all of a sudden had to adapt their teaching styles and resources to a new language of instruction (Pulcini and Campagna, 2015; Molino and Campagna, 2014). Voices of concern were also expressed in 2012, when the Rector of the *Politecnico di Milano* announced its decision to transform all the post-graduate and doctoral programmes into EMI courses, beginning from the academic year 2014-15. The shift to the English-only formula would lead to the abandonment of the Italian language and to the exclusive use of English as the medium of instruction. This decision provoked different reactions among faculty, academics, writers and intellectuals, resulting in a sharp division among the staff involved and in a lawsuit which was long debated at the Regional Administrative Tribunal (TAR) of Lombardy first and then at the Council of State. It was resolved in 2018 with the

acceptance of the parallel language use of Italian along with English and the provision of both the Italian and English versions of the degree programme, proposed by the Constitutional Court the previous year. This language policy, already rooted in the Nordic countries, aimed at preventing the spread of a potential monolingualism in the Italian territory that could be caused by the adoption of English as the exclusive medium of instruction (Molino and Campagna, 2014; Pulcini and Campagna, 2015; Santulli, 2015; Helm and Guarda, 2017; Costa, 2021).

The provision of EMI programmes varies across the countries involved and depends on the national and institutional needs; it has been the object of several publications and research projects on EMI, as in the case of the 'Transnational Alignment of English Competences for University Lectures' (TAEC) project, funded through the Erasmus+ programme. It investigated the EMI phenomenon and the lecturers' English proficiency of the five university members of the TAEC project: the University of Copenhagen (project leader), Universidad de Lleida, Università Degli Studi di Torino, Universiteit Maastricht, and the Faculty of Humanities and Social Sciences in Rijeka. Its main objectives were to develop a common framework of EMI studies carried out in the partner universities; to align the 'Test of Oral English Proficiency for Academic Staff' (TOEPAS), a locally-used assessment scale with the Common European Framework of Reference (CEFR) descriptors; and to create an EMI handbook addressed not only to EMI lecturers and trainers but also to those interested in this phenomenon¹.

The implementation of EMI has not been homogeneous across the countries interested, as for instance in Europe, where a geographical division between the **Northern** and **Southern European** countries has been highlighted by three large-scale studies carried out by Wächter and Maiworm (2002; 2008; 2014). These differences refer especially to the number of EMI programmes and the overall national proficiency in English across Europe and have been also confirmed by Campagna and Pulcini (2014), who hypothesized a divide between "two Europes", in terms of both educational policies and English proficiency. According to the last

¹TAEC project: https://www.dipartimentolingue.unito.it/do/progetti.pl/Show?_id=rren Last access: 30/01/2022

research undertaken by Wächter and Maiworm in 2014, EMI has increased rapidly in most of the European countries even though the majority of EMI programmes have been offered in the north of Europe. The Netherlands is the country that took the lead by providing the first EMI programme in Europe in 1987, at the University of Maastricht, followed by some Nordic countries such as Sweden, Finland, Norway and Denmark (Coleman, 2006; Costa 2009; Airey et al., 2017). Indeed, English began to be used as the language of scientific publications and research in most of the Northern European universities, paving the way for a significant and long-lasting provision of EMI degree programmes.

This has inevitably led to a sharp increase of the national levels of English proficiency, as shown in several *EF English Proficiency Index* reports, which have repeatedly elected the Nordic countries as the most proficient among numerous non-English speaking countries in the world, starting from 2011 until the most recent report, published in 2021 (Education First, 2011; 2021). Possible explanations for the high levels of English proficiency in Nordic countries may be attributed to the use of English along with their mother tongues in society and in the media and to similar linguistic features between English and the Nordic languages (Macaro, 2018).

Conversely, in the Mediterranean countries, EMI has proceeded at a slower pace, starting from 1990s, as in the case of France, Spain and Italy, where a stronger resistance to the EMI phenomenon has been observed. Among the principal obstacles to the growth of EMI we can find low levels of English proficiency, both in students and lecturers, limited financial resources and historical and political issues. Much concern has also regarded the threat of domain loss and the possible impoverishment of local languages and cultures, not only in the south but also in the north of Europe (Airey, 2004; Doiz et al., 2011, 2013; Hultgren, 2013; Kuteeva and Airey, 2014; Napoli and Sourisseau, 2013; Wächter and Maiworm, 2014; Arnó-Macià and Mancho-Barés, 2015; Dafouz-Milne and Camacho, 2016). Specifically in Italy, the issues of the unbalanced resources and funds available within the country and the low levels of English proficiency, found both in students and lecturers, have contributed to this evident gap with the rest of Europe (Coleman, 2006; Campagna and Pulcini, 2014).

The decision to offer EMI degree programmes at the tertiary level of education has also been supported by several countries in Asia and the Middle East where English-mediated education is perceived as a gateway to the rest of the world and as a way to train the students for the global job market and improve their English proficiency. Although it has been often welcomed positively (Hu, Li and Lei, 2014; Khan, 2013; Hamid, Nguyen and Baldauf, 2013), its introduction has stimulated debates on a wide range of issues which are similar to those raised in the European context. Possible impoverishment of local languages, domain loss and low quality of education due to insufficient English proficiency levels are among the most discussed issues in those areas (Kang and Park, 2005; Cho, 2012; Khan, 2013; Belhiah and Elhami, 2014; Ellili-Cherif and Alkhateeb, 2015).

Despite its benefits and challenges, the provision of EMI programmes is on the rise in many parts of the world. Students are often driven by the need to study in an international context and improve their language skills even though little research has been conducted on the role that EMI may play in potential students' language improvement and whether English proficiency may increase while students are focused on learning subject matter. Studies conducted on second language acquisition (SLA) have demonstrated that the acquisition of a new language usually takes place in a natural, unconscious and uncontrolled way, especially when the student focuses on communication, and it is similar to the process of acquiring the first language. If learners are provided with meaningful input, they "[...] can not only increase their second language proficiency in informal environments but may do as well as or better than learners who have spent a comparable amount of time in formal situations" (Krashen, 1981: 40).

This sheds lights on the concept of **incidental learning**, in which learners acquire and learn the language incidentally, indirectly and unconsciously while the subject matter is taught, and students are involved in meaning-oriented activities. *The Comprehensible Input Hypothesis*, theorized by Krashen (1981, 1982, 1985, 1995), suggested that students who are acquiring a second language need to be exposed to a qualitative language environment and require meaningful input and material. In his view, while the students' attention is principally focused on the main topic of the lesson, some incidental language learning may take place.

Although this type of language learning is driven by an unconscious process and occurs without formal instruction, this does not mean that students do not learn effectively; on the contrary, the SLA literature confirms that incidental learning may be an effective and alternative way of learning a second language, as long as a certain amount of significant input is given to the learners (Krashen, 1985; Snow, 1985; Wode, 1999). Additional factors are also thought to be necessary when learning a second language, such as the effective input received, called *intake*; the *output* (Swain, 1985; 1995) that refers to the attempts at producing some meaningful language production; the *negotiation of meaning* (Long, 1981), that takes place when two or more learners are interacting and checking understanding (the so-called “comprehension check”); and the teachers’ feedback (Long, 1981; 1996).

Despite the considerable literature around the theme of SLA, there is a relative paucity of empirical studies investigating whether students’ English proficiency effectively improves in EMI classes while subject content is delivered in English. Given the similar features of SLA and EMI settings, there is some evidence to believe that incidental learning may occur while students are involved in subject matter activities. Whereas language gains have been reported in some studies on EMI, which confirmed some improvement in the areas of technical vocabulary, receptive skills and speaking (Taguchi, 2011; Rogier, 2012; Aguilar and Muñoz, 2014; Ritcher, 2017; Ament et al., 2018), this is not the rule, mainly because of the lack of language goals in the degree programme and of the limited English skills of both students and lecturers. To deal with the low levels of English proficiency, some universities have set specific language entry requirements to enroll in EMI programmes, which usually range from B1 to C1 and are verified by means of internationally recognized certifications and in-house language assessment (Dimova, 2017, 2020; Cicillini, 2021).

All in all, the effective implementation of EMI programmes within non-English speaking countries seems to have its pros and cons which vary according to the national and local needs. Over the years, many scholars have attempted to identify the benefits brought by EMI but also the factors that have undermined its successful provision, not only in the countries where the introduction of English in

higher education still has to overcome several barriers and obstacles, but also in other countries where EMI is already well rooted. Undoubtedly, the English language plays a crucial role in the success of EMI. Although it has only an instructional function, some degree of language improvement is expected, especially by the students who believe that the exposure to the language while engaged in subject-oriented activities may be an ideal condition also for improving their English skills.

Aims and research questions

This study explores the role of English in an EMI medical setting in Italy and the students' language progress in two academic years. Since a limited number of studies have focused on students' language gains in EMI classes and none have specifically investigated the medical context in Italy, this research observes the students' language experience in an EMI medical school and whether any form of English improvement takes place.

This research seeks to answer the following research questions:

RQ1: What is the students' language experience in an EMI degree programme in *Medicine and Surgery*?

- A) What are the main motivations that drive students to enroll in an EMI degree programme in Italy?
- B) To what extent are students motivated to improve their English proficiency?
- C) What are the students' perceptions of studying in an EMI programme?

RQ2: Does the students' English proficiency improve during two academic years in an EMI environment?

- A) If so, which skills have mostly improved?
- B) Is language improvement voluntary or incidental?

A longitudinal approach is used to address these research questions. Firstly, it seeks to identify the students' motivations to opt for English-mediated education instead of studying through their L1, considered as determining factors in the students' learning process and achievements (Doiz and Lasagabaster, 2018); it reports the expectations of the programme and attitudes emerged during their first and second years of studying medicine in English. Secondly, it explores the role of English in the students' academic experience and their language outcomes at the end of two years. Thirdly, it verifies the students' English proficiency during the two academic years observed, whether education in the English-only formula may bring potential benefits to the students' proficiency and whether any form of language improvement takes place. Indeed, improving language skills is the one of the major motivating factors to choose English-mediated education.

Methodology

This longitudinal study observes the students' experience in an EMI degree programme in *Medicine and Surgery* in a period of two years of academic studies. To answer the research questions identified, both quantitative and qualitative data were collected through the use of language tests and questionnaires.

Context of the study:

This research is student-focused and involves a group of first-year students enrolled in an EMI degree programme in *Medicine and Surgery* at the San Luigi Gonzaga University Hospital, a university campus of the *University of Torino*. The degree programme analyzed is a single-cycle course offered in the department of Clinical and Biological Sciences, which has been recently activated, starting from the academic year 2017/2018. It is still in an experimentation phase, since the first six-year cycle has not been completed yet.

The degree course identified for this study has restricted admission procedures with a fixed number of candidates and specific entry requirements decided at national level by the *Italian Ministry of University and Research* (MUR).

Prospective candidates that wish to enroll in such a programme firstly have to sit and pass the International Medical Admission Test (IMAT)² which usually takes place simultaneously in all the Italian institutions where this programme is offered. If students pass the entrance test, they are placed on a national ranking of eligible applicants and assigned to a certain university, according to the institutions previously selected by the candidates. Once enrolled, if in the national test they have got low scores in certain subjects and in the English language, the students will have to attend specific remedial courses and pass compulsory exams before attending curricular classes. Indeed, throughout Europe, admission policies and specific language entry requirements are individually set by the universities that offer EMI degree programmes (TAEC EMI Handbook, 2019; Dimova, 2020). As regards the English language entry requirements, these are usually verified through internal tests (such as placement tests and oral interviews conducted by the academic staff) or external tests (such as international certifications) (Cicillini, 2021).

Participants:

One hundred students enrolled in the first (2019/2020) and second (2020/2021) years of the EMI degree programme in *Medicine and Surgery* were involved in the study. 65% of them are Italian while the remaining 35% are international students.

² IMAT: *International Medical Admissions Test* is offered by the Cambridge Assessment Admissions Testing and is aimed at measuring the prospective candidates' skills, specifically the students enrolling in EMI degree programmes in *Medicine and Surgery* and *Dentistry* in Italy. It evaluates the students' logical reasoning, general and scientific knowledge that they are expected to have for the admission to this degree programme. It is a 100-minute test composed of 60 multiple-choice questions.

<https://www.admissionstesting.org/for-test-takers/imat/about-imat/>

Last access: 16/12/20

Data collection instruments and timeline:

This study employs a mixed-method approach, combining both quantitative and qualitative data. The quantitative data collected from the language tests are analyzed statistically by using the Statistical Package for the Social Sciences (SPSS). The triangulation of data provides insights into the students' academic experience and language gains. The instruments designed to achieve the main objectives of this thesis are the following:

- 1) Three questionnaires;
- 2) Two pilot studies;
- 3) Two language tests.

1) Three **online questionnaires** were designed using Google Drive and Google forms and sent by email. They have open-ended, closed-ended and Likert-scale questions.

Questionnaire one (See Appendix 1) was sent at the beginning of the first year, in November 2019. The questionnaire is divided into three parts: (1) the first investigates the students' characteristics and personal background; (2) the second observes the students' self-evaluation of their English proficiency, according to the Common European Framework of Reference (CEFR) descriptors, and of their abilities in certain language activities. These include reception (listening and reading), production (speaking and writing) and interaction (spoken and written); (3) the last section focuses on the students' motivations to enroll in an EMI degree programme in *Medicine and Surgery* in Italy and the first impressions they had of the course.

Questionnaire two (See Appendix 2) was administered at the end of the first year, in July 2020. It aimed at reporting on the students' experience in the first year, their expectations of the new academic year and their relationship with the English language in the academic context. (1) The first section investigates the degree of

satisfaction felt by the respondents at the end of the year; (2) the second explores the students' English proficiency and their relationship with the language; (3) the third investigates the students' experience in the EMI setting (examinations, quality of interaction, issues due to the shift from face-to-face to online education during the COVID-19 pandemic).

Questionnaire three (See Appendix 3) was sent at the end of the students' second year, in July 2021. It is divided into two parts: (1) the first investigates the respondents' attitudes towards EMI and their satisfaction about the quality of education; (2) the second part focuses on the students' language experience and progress after two years of English-mediated education.

2) The **pilot studies** were designed to verify the validity and efficacy of the language tests. Firstly, the language tests were designed and then administered to a small group of students. The students involved in the pilot study were of the same age (19-20 years old) and level of English (B2 level) as the medical students sampled (Appendices 4 and 5).

3) Two **language tests** were developed following the steps suggested by the "*Manual for Language Test Development and Examining. For use with the CEFR*" and previous research in the field of language testing (Bachman, 1990; Bachman and Palmer, 1996; McNamara, 2000). The tests aimed at assessing the students' receptive skills from the beginning of the first year (language test one) to the end of the second year (language test two).

They are divided in two parts: a reading and a listening comprehension. The reading comprehension is composed of a scientific text and 25 multiple-choice questions. The listening comprehension includes a video from the BBC and 35 questions (multiple choice; true or false; fill the gaps). The main aim was to collect and compare the results of the two tests and observe the students' language development during two years of studies in English.

Test one (Appendix 6) was paper-based and was administered in a face-to-face class to 30 students. The remaining students were absent probably because of problems on the set day (bad weather and transport strike). For this reason, it was decided to give a second chance to the absent students through a digital version of the same test, delivered by the Moodle platform. On the whole, 47 out of 100 students completed language test one.

Test two (Appendix 7) was designed using the Moodle platform and administered online at the end of the students' second year. Since two students dropped out of university, it was sent to the remaining 98. Overall, 50 out of 98 students completed language test two.

Structure and organization of this thesis

In this thesis there are five chapters, organized as follows: the **first chapter** describes the role of English as the global language of communication and more recently of education and highlights its relationship with colonialism, the British Empire and globalization, which have contributed to the extensive and growing use of EMI in higher education. It briefly discusses the plurality of Englishes developed and used throughout the world and presents the main characteristics of *English as a native language* (ENL), *English as an International Language* (EIL), *English as a Lingua Franca* (ELF) and *English as a Foreign Language* (EFL). It therefore offers an overview of the process of the internationalization of higher education which is taking place in many countries all over the world, mainly driven by economic, political and institutional reasons. It then deals with the relevant literature on EMI and clarifies the different labels and definitions attributed to the EMI phenomenon; it describes additional educational settings such as *CLIL* (Content and Language Integrated Learning) and *ICLHE* (Integrating Content and Language in Higher Education), which share some commonalities with EMI. The reasons for implementing EMI are also discussed, together with the dissenting voices against the use of English as the sole medium of teaching and learning, from different perspectives. Therefore, an analysis of the use of EMI in several countries

all over the world follows, together with their linguistic and social implications, underlining the fundamental drivers towards EMI, the language policies adopted, and the attitudes developed as well as the main concerns expressed about the massive use of this approach. Then, it focuses on the Italian tertiary level setting and on the late introduction of EMI programmes that began in 90s, compared to other countries; a growing but controversial phenomenon that has encountered some resistance – as the case of the *Politecnico di Milano* shows – and that is still under scrutiny by policy makers and different opponents.

The **second chapter** deals with the central role played by English in EMI classes. Since students learn in an English-medium instruction environment and are exposed to constant language input, previous theories on second language acquisition (SLA) are presented in order to verify whether they can be applied to EMI settings. Given the amount of time spent in an EMI setting, there is some evidence to conclude that students' English proficiency may improve incidentally while they are focused on the disciplines taught. Considering that the focus of EMI classes is not on language but on content, English proficiency improvement in this special setting is still under scrutiny by EMI scholars. Research on language gains and English skills improvement is reported throughout the chapter together with the main challenges emerged from the limited language skills of both students and lecturers. To cope with the issue of low language proficiency, several universities have decided to set specific admission requirements which are presented and discussed in relation with the “Common European Framework of Reference for Languages” (CEFR) descriptors.

The **third chapter** describes the context of the study, that is the EMI degree programme in *Medicine and Surgery* at the *University of Torino*. In this chapter, the research questions and hypothesis, the instruments and the participants of the study are described. This is a mixed-method study which combines both quantitative and qualitative data collected in two years. The triangulation of data provides better understandings of the issues considered and enables to answer the research questions posed at the beginning of the study. In this chapter, the instruments used to collect data are described in detail, which included three questionnaires and two language tests. Before their administration, both the

instruments were piloted to verify their validity and reliability. The data analysis is also described as regards both the quantitative and qualitative data. The chapter concludes with some ethical considerations and limitations of this study.

The **fourth chapter** presents the results of the research, together with the analysis of the main findings. Since a longitudinal approach was used to collect data, results are presented according to the time when they were collected. The first part of the chapter deals with the first academic year and describes the results from questionnaires one and two and from language test one. The students' motivations to enroll in an EMI medical school together with their expectations of the programme, and their academic experience are illustrated. The participants' performance in the first language test is presented and statistically analyzed. The second part of the chapter focuses on the second year, specifically on the students' language pathway in the EMI setting (questionnaire three) and on their scores obtained from the second language test. In the last section of this chapter, a comparison between the mean scores of tests one and two is made through some Paired-samples T tests run in SPSS, in order to calculate the degree of significance of the test results.

The **fifth chapter** provides a discussion drawn from the results in relation to the research questions posed in the study. It presents the key findings of the research and how they relate to previous studies on similar issues. Finally, it also discusses implications on practical and theoretical aspects of language development in Italian EMI contexts.

Chapter 1. Literature review of English as a medium of instruction

1.1 Introduction

This chapter deals with the global spread of English as the international language of communication exploited in various domains, from science to business and, more recently, in education. This section explores how English has achieved the status of lingua franca of communication and sheds light on the relationship between English and the concepts of globalization, internationalization, marketization and Englishization of higher education. In addition, the concepts of *World Englishes* (WE), *English as an International Language* (EIL), *English as a Lingua Franca* (ELF) and *English as a Foreign language* (EFL) are briefly discussed in order to gain insights into the increasing use of *English as a medium of instruction* (EMI) in higher education. Most of this chapter focuses on the EMI phenomenon, which is widely analyzed from different points of view: starting from the labels and definitions given by the most influential scholars to its main features and drawbacks. The *Content and Language Integrated Learning* (CLIL) and *Integrating Content and Language in Higher Education* (ICLHE) approaches are also discussed and compared to EMI. Then, the main drivers and opponents towards the implementation of EMI in the world are observed, with a focus on Europe where the provision of English-taught programmes is expanding rapidly. In addition, the global trends and attitudes to the adoption of English as the most common language of instruction are described together with the educational policies and strategies adopted by the countries involved. Thus, this chapter's aim is to provide an overview of what EMI is, what its adoption implies at a local, national and international level and what is needed to fully appreciate it, starting from the assumption that strategic policies and careful planning are crucial to its success.

1.2 The spread of English in higher education

Nowadays, English is regarded as the language of international communication, science, trade, business and global education, and is widely used by people who have different first language backgrounds to exchange information and services, and to do business. English has been exploited in different contexts and domains and has recently become the language of the internet and technology, and the most studied and used foreign language worldwide by non-native English users. As a consequence, non-native speakers have significantly outnumbered native speakers, often shaping their own varieties of the English language according to their needs and cultures. This has confirmed what had already been theorized by David Crystal, a well-known authority on the English language, who claimed that “if there is one predictable consequence of a language becoming a global language, it is that nobody owns it anymore” (Crystal, 2003:2). Its growing expansion and massive use have led English become a **global language** used in numerous countries and communities as an official, second or foreign language. As a matter of fact, English has spread to such an extent that nowadays is no longer considered to be the exclusive property of Anglophone countries.

The increase of the number of English speakers and users in the world began in the 5th century with the colonization of Scotland, Wales and Ireland where English started to be used as the language of instruction and education, thus replacing the Scots, Welsh and Gaelic languages. Its expansion continued during the development of the British Empire through the imposition of the English language in the British colonies; indeed, it was used as a contact language between rulers and ruled and soon became the main language of education. It retained a privileged position in those territories and became the medium through which local people could reach leadership and top professional positions (Jenkins, 2003; Mazzaferro, 2018). Even after the decline of the British Empire and the independence of the former colonies in the twentieth century, Britain continued to play a central role in those countries. Actually, several newly independent countries

maintained their ties with the United Kingdom through the Commonwealth³, a voluntary association established in 1931.

The spread of the English language worldwide increased exponentially in the twentieth century, during and after the two World Wars. The British Empire and the distribution of English in its colonies all over the world, the establishment of the League of Nations⁴ in 1919, in which English was the main language used and the American economic and political prestige after the Second World War, were key factors for the English language expansion worldwide. In addition, English was the primary language used during and after the two world wars and soon began to be spoken also in several non-colonized territories. For instance, in Italy, its spread began after the Second World War, to contrast the language policies established by the Fascism (Mazzaferro, 2017) and as a result of the “Americanization” phenomena of the Western countries. The expansion of the English language in Italy was also facilitated by the growing number of loanwords and anglicisms, since the 13th century onwards, as the early loanwords *sterlino*⁵ and *costuma*⁶ (Pulcini, 2017).

Since the eighteenth century, English has gradually replaced the use of other international languages, such as *Latin* which had been considered the language of culture and science during and after the Roman Empire because of the power of both the Roman Empire and the Church of Rome; the *French language* suffered from a similar fate because it used to be recognized as the language of diplomacy

³ The Commonwealth is a free association of countries whose main aim is to maintain peace and foster development and democracy. It was established after the dissolution of the British Empire. Although it is historically linked to the British Empire, any country in the world can become a member. It is currently composed of 54 countries, among these many ex British colonies joined the association after they obtained the independence.

<https://thecommonwealth.org/about-us>

Last access: 12/01/2021

⁴ The Council of States was established by the Allied powers (Great Britain and the British Empire, France, and the Russian Empire) at the end of the First World War with the aim of guaranteeing alliances and fostering international cooperation. It was originally composed of the United States, Great Britain, France, Italy and Japan. While the United States never played a predominant role in the organization, other countries became permanent members such as Germany and U.S.S.R. The Council of States was dismissed after the Second World War, in 1946.

Retrieved from: <https://www.britannica.com/topic/League-of-Nations/Members-of-the-League-of-Nations>

Last access: 14/01/2021

⁵ From the English term *sterling* which at that time referred to a coin used in trade (Pulcini, 2017).

⁶ From the English term *customs*.

and international relations until the beginning of the 20th century. Although French is still used as a working language of many international institutions and organizations such as the European Union and the European Commission, its status of international language has largely been replaced by English. Indeed, English has also been adopted as one of the official languages of the *United Nations* (UN)⁷, established in 1945, and of the *North Atlantic Treaty Organization* (NATO)⁸, established in 1949.

The increasing use of English for different purposes is mainly due to the political and military power of its speakers (Crystal, 2003; Graddol, 2006). Indeed, the status of a global language and lingua franca of communication is not strictly related to the number of people speaking that language but has to do with the economic power of the country where the language is spoken. More recently, it has begun to be used as a means for teaching and learning in those educational contexts where English is not the first language of most of the students and lecturers (Macaro, 2018). Thus, in such an educational context most of the participants are non-native English speakers (Pecorari and Malmström, 2018).

Nowadays, English is a symbol of power, globalization, diversity and is the preferred language for several international activities. Because of its spread and the numerous contexts and domains in which it is used, many terms have been coined to encompass all the characteristics and aspects of its expansion and linguistic dominance. Its massive use as the global language of communication has caught the attention of many scholars and has led to further research about its status; as a consequence, the field of Global Englishes and the phenomena of *World Englishes*, *English as an International Language*, *English as a Lingua Franca* and *English as a Foreign Language* will be briefly described and discussed.

⁷ The United Nations (UN) was established in 1945 and shared some of the objectives set in the previous Council of States. Among these, maintaining international alliances and cooperation, peace and security worldwide but also promoting human rights and equality. The members of the UN are numerous and from different parts of the world while the official languages are six: Arabic, Chinese, English, French, Russian and Spanish. Retrieved from: <https://www.un.org/en/>
Last access: 13/01/2021

⁸ The North Atlantic Treaty Organization (NATO) is an international organization whose main aim is to guarantee security and liberty to the state members, which are currently 30 throughout the world. It was established in 1949, some years after the end of the Second World War. Retrieved from: <https://www.nato.int/nato-welcome/index.html>
Last access: 12/01/2021

The **World Englishes** approach is mainly based on the assumption that many varieties of English exist around the world – named Englishes. There are different interpretations of this expression, as suggested by Bolton (2004). It is an umbrella term that refers to the different forms and uses of the English language (Jenkins, 2006) and “should not be seen in terms of a single monolithic standard” (Kirkpatrick and Deterding, 2011:374), but as something constantly changing. The term also refers to the forms of English spoken in the former colonies where it often has official status (Jenkins, 2003, 2006). Jenkins (2009) maintains that the term *World Englishes* encompasses all the varieties of English, regardless of the speakers’ nationalities and mother tongues (Jenkins, 2009).

Over time, the nature of the English language and the plurality of Englishes have been largely investigated by scholars all over the world through the development of several theories and models (Kachru, 1985, 1988; 1992; McArthur, 1987; Strevens, 1992; Graddol, 1997; Modiano, 1999; Görlach, 2002; Mesthrie and Bhatt, 2008; Meierkord, 2012; Mair, 2013; Schneider, 2014). Kachru’s three circles of English (1985) model is considered the basis of the World Englishes debate and the most influential model of the expansion of English in the world (Onysko, 2016). He proposed a three-circle model composed of three concentric circles, divided according to the countries where English is used. The *Inner Circle* includes the countries where English is the primary and *native language* (ENL) of the majority of the speakers; thus, this section refers to the native speakers living in the UK, the US, Canada, New Zealand; the *Outer Circle*, also named *Extended*, mostly represents the former colonies⁹ where English is recognized as the official language and is usually acquired as a *second language* (ESL), e.g. in India, Bangladesh, Nigeria, Singapore; the *Expanding Circle*, or *Extending*, includes the territories where English is learnt and used as a *foreign language* (EFL), e.g. in Japan, China, Saudi Arabia, Caribbean Countries (Kachru, 1985; Kirkpatrick and Deterding, 2011). Despite its popularity, Kachru’s model has been criticized mainly because it concentrated on countries rather than on small territories and socio-cultural realities; moreover, the countries included in the three concentric circles are static

⁹ During the colonialism, the British Empire imposed English as the main language of the former British colonies. A cultural, economic and linguistic tie that in some cases has been maintained also after the independence of some territories through the establishment of the Commonwealth (1931).

and possible moves from the Expanding circle to the Outer Circle have not been considered (Onysko, 2016). Some scholars also argue that the varieties of English spoken in the Expanding circle have not been taken into account, although they are currently used by the vast majority of English speakers in the world. Although the Kachru's main interest was to describe the evolution and the spread of English in the world and to shed light on how it was learnt, both in formal and informal contexts (Macaro, 2018), it can hardly portray the current use of English; this is even truer when it comes to the language used in the Expanding Circle - where there is the highest number of non-native English speakers in the world. Nevertheless, the Kachru's model is considered as a major milestone for the research on the spread of English and is still a starting point for studies in the field of World Englishes.

English as an International Language (EIL) is another term used to define one of the main functions of English that is to foster and facilitate communication. The model of EIL was developed by Modiano in 1999 and is characterized by all the varieties of English used in intranational and international contexts, by native and non-native English speakers, within the Kachru's model (Modiano, 1999; Jenkins, 2003). It refers to that code used as a communicative medium, which does not impose any cultural influence of the language on speakers' values and ideologies. In addition, it takes into account the geographical dimension of the previous models (Strevens, 1992; Kachru, 1985, 1988; 1992; McArthur, 1987; Görlach, 2002) but also places emphasis on the speakers' proficiency and ability to communicate, both of native and non-native speakers.

When English is used as the common language among people whose native language is not English, the mostly used term we refer to is **ELF (English as a Lingua Franca)** (House, 1999; Gnutzmann, 2004; Seidlhofer, 2004, 2011; Jenkins, 2006, 2009; Mauranen, 2006; 2012). Thus, English is used as the lingua franca of global communication when people with different first languages need a shared medium to communicate. Firth (1996) defines it as:

[...] "a 'contact language' between persons who share neither a common native tongue nor a common (national) culture, and for whom English is the chosen foreign language of communication" (Firth 1996: 240).

In other words, non-native English speakers (from *Expanding Circle* countries) are the major users of ELF, since they have different mother tongues and without a common linguistic code, they would probably need interpreters anytime (Crystal, 2003; Seidlhofer, 2004; Graddol, 2006; Jenkins, 2009). As House (1999) argued, ELF interactions take place among people with different language backgrounds, consequently English native speakers seem to be excluded from this classification (House, 1999; Jenkins, 2006). Hence, in this context, the priority is to communicate in an international environment and English represents the linguistic medium to communicate and exchange information, also considering that it is often the only shared language available (Seidlhofer, 2011). In Jenkins's (2009) view, ELF does not refer to "any specific geographical context. ELF communication is not tied to any particular geographical area but is defined by who the participants are and how they orient to English" (Jenkins, 2009).

The rationale behind the use of ELF is to foster an effective communication especially among non-native English users, although English native speakers may also take part in ELF situations. In this context, English native speakers are significantly fewer than non-natives and, according to some scholars, can no longer control the norms and the rules of the language (Seidlhofer, 2011). Nonetheless, some scholars claim that ELF speakers do not use the language correctly and exclude English native speakers from the broader meaning of ELF (Firth, 1996; House, 1999). Another debated issue about ELF communication is whether standard English should be regarded as a model to follow or not. Influential scholars, such as Jenkins (2006; 2011) and Cogo (2008), argue that in ELF situations, non-native speakers use English as a common language and consequently they should not aim at a native speaker competence; instead, they should be more focused on conveying the message and understanding the overall meaning of the conversation. In their view, the main objective of an ELF communication is not to emulate the native speakers but to have a shared medium of communication to use with other non-native English speakers, when the need arises. Nevertheless, Seidlhofer (2004) maintains that "(.) there is still a tendency for native speakers to be regarded as custodians over what is acceptable usage"

(Seidlhofer, 2004:339). In that case, it would be more appropriate to talk about **EFL (English as a Foreign Language)**, in which people learn the language as part of their education and personal knowledge. Indeed, the main objective of an EFL class is to teach the standard English norms to non-native English users and consequently, native English represents the correct model to follow (Jenkins, 2006). In this educational context, the standard English rules are the basis of a correct and meaningful communication and variations from standard English are considered errors or deviations from the norm. By contrast, in an ELF situation, errors are seen as innovative ways of using the language because the objective is to adapt the language to the communication context and to fulfil communication tasks. In Mackenzie's (2014) own words, in an ELF situation:

[...] "speakers choose not to imitate the lexico-grammatical norms of any given native English variety – or indeed any nativized or indigenized variety – but rather adopt ways of speaking which aid intelligibility and successful communication" (Mackenzie, 2014: 395).

Indeed, a crucial characteristic of ELF is its variability. ELF is not considered as a variety of English but as a variation in the way English is used; for example, repetitions and redundancy are seen as powerful communicative strategies in an ELF communication (Seidlhofer, 2011). Linguistic diversity is accepted, and the appropriateness of the language used mainly depends on the communicative function (Cogo, 2009). According to Jenkins (2006), learners should use the varieties of English they believe to be more appropriate to each communicative context and the linguistic forms they are more familiar with. They should learn how to communicate in ELF situations and pay attention to the main goal of communication, by using flexible and intelligible forms of the language (Jenkins, 2006). As a matter of fact, key factors of an ELF communication are intelligibility and comprehensibility, in which the main focus is on the content and the meaning of the message delivered. Linguistic accommodation is another crucial aspect of the ELF setting, in which the speakers are not focused on the form and the correctness of the language used but on the content of their conversation and the overall comprehension (Jenkins, 2009; Jenkins, Cogo and Archibald, 2011).

The ELF approach has demonstrated to be an effective approach for describing how English is currently used in the world. Its use has also been observed within many higher education settings where English is used as an effective way for communicating among non-native English speakers (Jenkins, 2003, 2006, 2009; Seidlhofer, 2009; Mauranen, Hynninen, and Ranta, 2010). This may be the case of the EMI settings where English is used as a medium of teaching and learning among domestic and international students who do not usually share the same L1 even though ELF is not often explicitly referred to in the EMI literature (Jenkins, 2019). Indeed, a general consensus is still missing about what the vowel “E” of EMI stands for and consequently a heated debate is still going on about the type of English used in such an educational and international context (Macaro et al., 2018). As Jenkins (2019) asserts, while the ELF scholars (Seidlhofer, 2011; Mauranen, 2012, to cite some) assume that EMI and ELF are intertwined and that the English used in that context cannot be native English but ELF, EMI scholars are still attempting to find an exhaustive explanation for the type of language used and its implications (See Section 1.4). Indeed, ELF has also opened debates on the English language features and correctness and whether its use may endanger the integrity and the status of other languages (Hultgren, 2013; Phillipson, 2015; Pulcini and Campagna, 2015).

To sum up, nowadays English is a global language and the most widely used tool to communicate in the world mainly because of historical, political and economic factors. Indeed, the power of the British Empire and the political and economic leading role of the UK and the US in the world have contributed to its expansion. Its popularity is the result of the massive use of English as the sole working language in business, trade and several international organizations such as the European Union, in which it is one of the official working languages, together with French and German, at least up to the Brexit in 2020. In the last decades, it has also begun to be introduced in education, in those countries where English is not a native language but an additional language and a common medium for international and intercultural communication.

1.3 Internationalization of higher education

Over the past decades, a growing number of universities in the world has set the goal of becoming more innovative and international and has included internationalization as a key aspect of their institutional policies. Among the strategies adopted to respond to the call for the internationalization of higher education, many universities have begun to adopt **English as medium of instruction (EMI)** and to offer degree programmes completely taught through the medium of English, despite it is not the first language of most of the main stakeholders involved, i.e., students, lecturers and administrative staff. Indeed, some scholars argue that one of the major reasons for higher education institutions to activate degree programmes in the English-only formula is to respond to the call for internationalization, to become more competitive in the global educational market and to gain more academic prestige worldwide (Doiz et al., 2011; Pulcini and Campagna, 2015; Valcke et al., 2017). Moreover, even though English has long been used as the language of education in the former British colonies (Outer circle), EMI is a relatively new phenomenon that is also spreading in many countries situated in the Expanding circle, as for instance in Europe, China and Japan.

The concept of international education has always existed in terms of both global knowledge and student mobility (Altbach, 1998; The Economist Intelligence Unit, 2020). As De Wit et al. (2015) argue, universities have always been global and have had international relationships with others, although in time they have implemented major changes in their organization and dimension. In the second half of the twentieth century, higher education has been significantly influenced by the growth of the globalization of markets, economy, trade and culture (Knight and De Wit, 2018). **Globalization and internationalization** are two concepts which share common traits, although both the phenomena are complex and multifaceted and may have different purposes and outcomes depending on the people involved (Knight, 2012). As far as the educational setting is concerned, the two terms are often used with reference to the current scenario of global education, in which geographic borders have been virtually removed and have left space for international cooperation, mobility and exchanges (Dafouz-Milne and Smit, 2014).

New forms of distance education and e-learning have been introduced and new terms have been recently coined, which include ‘transnational education’, ‘borderless education’, and ‘cross-border education’ (Knight, 2015: 1). All these terms highlight the global and international dimension of education, in which geographic distance is not seen as a challenge anymore but as a reality. Nonetheless, national borders still have strong influence when it comes to national responsibility, especially when the institutions have to shape their strategic actions for enhancing high educational standards (Knight, 2015).

A much-quoted definition of internationalization offered by Knight (2015), claims that:

“Internationalization at the national sector and institutional levels is defined as the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of postsecondary education” (Knight, 2015:1).

What emerges from this definition is the global perspective of the concept of international education; the term internationalization refers to a dynamic combination of economic, political and educational factors, influenced by the global dimension but firmly anchored in the national systems and internal funding available. International and intranational elements are combined and balanced according to the national interests and the global demands. Therefore, the internationalization of higher education entails the integration of a global perspective into regional and national contexts (De Wit et al., 2015).

Although each institution has to deal with specific national policies and regulations, there are some common reasons to internationalize the educational settings, such as improving international reputation and prestige; increasing international awareness; improving the overall quality and excellence of education and research; increasing international networking; attracting more students, both domestic and overseas (Coleman, 2006; De Wit et al., 2015; Jones, 2013; Wulz and Rainer, 2015). Because of the strong competition recently emerged among several universities in the world, the major drivers towards the internationalization of higher education revolve around international rankings, quality standards and financial interests.

Since the beginning of the 21st century, these conditions have significantly contributed to the growth of the concepts of **marketization** of higher education (Coleman, 2006) and entrepreneurial university (Mautner, 2005; Campagna, 2008). In Coleman's view (2006), academia has been dramatically changed and transformed into an internationalized and globalized entity where universities have become brands and have been forced to adopt different strategies to attract new students, who in turn are treated as fee-paying customers. He maintains that:

“The combination of higher individual fees, greater student mobility, and excess of supply over demand has accentuated the market character of HE: the student has become the customer. Universities are no longer institutions but brands” (Coleman, 2006: 3).

This wave of marketization of higher education all over the world has transformed many universities into institutions where actions and policies are also driven by financial goals. Under these conditions, the concept of “**entrepreneurial university**” has been developed (Mautner, 2005), mainly stressing the impact that the business and financial dimensions have on the university community. As a matter of fact, over the last decades, higher education and business have considerably strengthened their ties by melding educational, cultural and economic interests. The rationale behind the growing number of marketized universities is twofold. Firstly, modern universities need to become more international because of the competition with other universities and the increase of mobility exchanges; secondly, the internationalized universities need to raise money and funding to become more innovative, attractive and accessible to a wider student population (Mautner, 2005). In this perspective, students become clients of large educational businesses, that are the universities themselves, and their satisfaction and final outcomes play a key role in the institutional policies and strategic plans.

The phenomenon of the marketization of higher education, facilitated by the close contact between universities and economy, is perceived in different ways and may provide advantages and disadvantages to academia. On the one hand, it may make universities more international and innovative by providing new teaching methods, increasing joint projects, hiring visiting academic staff and promoting

interculturality (Mautner, 2005; De Wit et al., 2015). Campagna (2008) argues that the educational domain and the economic interests can positively co-exist within the concept of entrepreneurial university and that the marketization of higher education may lead to innovation and novelty (Campagna, 2008:181). Similarly, Leask (2015) asserts that modern and internationalized universities may combine educational and intercultural elements with income and profits (Leask, 2015: x¹⁰). On the other hand, the economic interests and business strategies adopted by the entrepreneurial universities may undermine the academic principles of “higher education as a public good” (De Wit et al., 2015: 31) and negatively affect the students’ experience, e.g., expensive fees, managerial practices and business environments (Coleman, 2006). Therefore, a good balance between academic values and entrepreneurial activities is advocated for high quality educational curricula.

The call for internationalization has led many institutions all over the world to respond and develop new strategies and activities, which encompass the following key steps: global collaboration within academia in the forms of international projects and exchange of knowledge and resources (De Wit et al., 2015); strategic research partnerships; shared educational systems; mobility programmes for students and faculty members (Wulz and Rainer, 2015); international staff recruiting; digital and open access learning (Guri-Rosenblit, 2015); English medium Instruction (EMI) degree programmes, offered at different levels (Dafouz-Milne, 2014; Helm, 2020), “internationalization at home” (IaH) and “internationalization of the curriculum” (Jones, 2013; Leask, 2015).

The concept of *internationalization at home (IaH)* was introduced in the 90s as a potential alternative to education across borders, namely *internationalization abroad*, which embraces students and staff mobility, exchanges, and joint projects. Conversely, “internationalization at home” refers to a strategic university policy, which consists in developing an international and intercultural curriculum within the local context (Beelen and Leask, 2011). The *internationalization of the curriculum (IoC)* includes different types of activities which can be conducted “at

¹⁰ Series editor’s foreword, p. x. Leask, B. (2015). *Internationalizing the curriculum*. London: Routledge.

home” and which are focused on improving the students’ international awareness and competences. It implies campus-based activities in which the presence of international students may be helpful but not strictly necessary for their success; indeed, an internationalized curriculum could be also beneficial in classrooms with local students only (De Wit et al., 2015). Through an internationalized curriculum, students may learn new skill sets for future jobs and develop new perspectives as global citizens in their home universities (Leask, 2009).

Although numerous reasons exist to internationalize higher education, the modalities, strategies and policies adopted depend largely on the countries and the institutions involved. In recent years, the education systems of many countries in the world have undertaken new initiatives and measures to renew their traditional educational policies (Bendazzoli, 2015). Together with a more transnational education and international academic staff, more mobility opportunities and transnational projects with foreign institutions, the implementation of the English-only formula in higher education has become a common practice. Indeed, a growing number of universities in the world has begun to offer degree programmes entirely taught in English, namely English-Medium Instruction (EMI) courses, as a response to the call for internationalization and as a strategy for the internationalization “at home” and of “the curriculum” (Dafouz-Milne, 2014). As a consequence, “[...] internationalisation must be taken as one of the main reasons for using English as a medium of instruction across universities in Europe [...]” (Smit and Dafouz-Milne, 2012: 3). Needless to say, EMI is tied to the increasing use of English as the global language of communication and education. To use Macaro’s own words (2018), “Education both contributes to and is influenced by the status of English as an international language of communication” (Macaro, 2018: 19).

The English language plays a major role in the **internationalization of higher education**, which in turn has contributed to its linguistic hegemony and massive use in several domains and fields (Phillipson, 2015). The globalization of communication, education and culture has led many people learn at least one foreign language, generally English, in order to have easier access to information and knowledge, build higher professional profiles and have more job opportunities. Moreover, in recent years, many institutions have switched from teaching English

as a subject and as a language to using it also as the medium of instruction to deliver subject matter (Wächter and Maiworm, 2014). As a result, the internationalization of higher education is often identified with the processes of globalization, marketization and “**Englishization**” of higher education (Kirkpatrick, 2011). The extensive use of English in academia, especially in non-English speaking countries, has taken the forms of foreign language teaching (EFL), language of scientific publications (Plo Alastrué and Pérez-Llantada, 2015; Salomone, 2022) and EMI degree programmes (De Wit et al., 2015). Indeed, a study conducted by Bocanegra-Valle (2013), which involved 133 scholars from 18 European universities, confirms that English is considered by the respondents as the language mostly used and required to write academic papers. As a matter of fact, many academic journals in the world opt for English as their working language in order to reach a wider audience and obtain more citations, strengthening the role of English as the sole language of scientific publications (Lasagabaster, 2015). Indeed, roughly 90% of academic research is written and published in English¹¹ (Galloway, 2017).

The phenomenon of “Englishization” and the subsequent implementation of EMI degree programmes have certainly brought numerous benefits to the academic institutions, e.g., increase of enrollments, income and international networks; but at the same time, concerns have been expressed about the relation between English and the local languages, as well as issues of monolingualism and plurilingualism. As a matter of fact, the extensive use of English is perceived by some scholars as a threat to small and local languages and is clashing with the promotion of multilingualism and multiculturalism in academia, encouraged by the European Commission (2018) (Doiz et al., 2011, 2013; Kirkpatrick, 2011; Pagèze and Lasagabaster, 2017; Philippon, 1992; 2009; 2012).

Nevertheless, much research has been conducted on the benefits and drawbacks of adopting English as the medium of teaching and learning, both in Europe and more specifically in Italy, which will be presented and discussed in Section 1.4 below.

¹¹ Retrieved from: <https://www.britishcouncil.org/voices-magazine/how-effective-english-medium-instruction-emi> Last access: 18/01/2021

1.4 English-medium instruction (EMI)

Over the last decades, higher education has undergone significant changes, mostly as a response to the pressure to internationalize the entire academic system. The shift from using English as a foreign language (EFL) to the medium of instruction (EMI) in non-Anglophone countries, has been the object of extensive studies and research conducted in the last twenty years or so, by many scholars all over the world. The driving forces behind the impressive growth of EMI are essentially related to institutional and economic factors and to the need to compete with other institutions in the world (Dearden, 2015; Wächter and Maiworm, 2008, 2014). Internationalization is high on the agenda of many institutions and much research on this topic suggests that EMI is considered a key strategy, firstly to reach that goal and secondly to enhance the prestige of academic institutions, to increase the number of fee-paying students and to encourage student mobility (Wilkinson, 2013; Dafouz-Milne, 2018; Macaro, 2018). The “Englishization” of higher education (See Section 1.3) has resulted in the almost exclusive use of English in textbooks, scientific publications and more recently in educational settings as a means of teaching and learning, from the primary to the tertiary level of education (Wilkinson, 2004; Hultgren, Jensen and Dimova, 2015). As a consequence, the linguistic power of English has increased exponentially, encouraged by new linguistic policies at university level, not only within Europe but also in Asia and the Middle East (Macaro et al., 2018). As a matter of fact, the role of English is deeply intertwined with the phenomena of EMI, internationalization, globalization and marketization of higher education (Kirkpatrick, 2011; Doiz et al., 2013).

1.4.1 Labels and definitions

Multiple labels and definitions of the acronym EMI have been offered by several scholars in the field in order to provide different insights into the phenomenon. As Macaro et al. (2018) assert in their systematic review of EMI in higher education, a wide variation of terms referring to the EMI phenomenon has been noted in several publications all over the world. Yet, the labels and definitions

given to EMI are “inconsistent and problematic” (Macaro et al., 2018: 46) and “a lack of consensus”, to use Macaro’s (2018:15) own words, has been observed in the literature on EMI. In a way, this emphasizes the novelty of the research field but also the challenges of a phenomenon which is still at its early stage but rapidly evolving (Macaro, 2018). As a matter of fact, the introduction of EMI in the global educational environment has been seen as an opportunity by some, not only for the institutions but also for students and lecturers; but at the same time, it has also raised concerns at different levels, from the possible threat to local and minority languages to social and cultural inequalities that its adoption may exacerbate.

EMI is an acronym which stands for **English Medium Instruction**. This phenomenon has been called in different ways so that various near-synonymic labels exist in the literature to refer to it. This instability in the denomination of this phenomenon has been noted by Macaro (2018), who discusses a range of terms used by many EMI scholars around the world, in which the words “English + Medium” have been used. Following Macaro’s survey (2018), Table 1 offers an updated list of labels encountered in the literature on EMI and the works in which they are used. In some cases, labels differ only in their orthographic form, while in some other cases, the label underlines: the means used to communicate in that educational context is English (*English medium instruction; English-medium instruction; English medium of instruction; English as the medium of instruction; English as a medium of instruction; English language as medium of instruction*); the role of English as a lingua franca and a common language among the stakeholders involved (*English as the lingua franca medium of instruction*); the language used at the tertiary level of education is English (*English-medium ‘higher’ education; English-medium higher education; English-medium university*); English is the language through which content is taught in some classes (*English medium content classes*); lecturers teach through English (*English-medium teaching*); the language used to teach and learn in certain degree programmes is English (*English-medium courses; English-medium programs; English medium programmes; English-taught programmes; English-mediated programmes/settings; English-only programmes/degrees*).

Label:	Source:
English medium instruction	Kang and Park, 2005; Kim and Sohn, 2009; Byun et al., 2011; Islam, 2013; Dearden, 2015; Huang, 2015; Dearden and Macaro, 2016; Macaro, Akincioglu, and Dearden, 2016; O'Dowd, 2018; Macaro, Tian and Chu, 2020.
English-medium instruction	Doiz et al., 2011; Tatzl, 2011; Bolton and Kuteeva, 2012; Cho, 2012; Rogier, 2012; Smit and Dafouz-Milne, 2012; Wilkinson, 2013; Kim, Tatar and Choi, 2014; Kim and Shin, 2014; Yoxsimer Paulsrud, 2014; Phillipson, 2015; Studer, 2015; Guarda and Helm, 2016; Sabaté-Dalmau, 2016; Airey et al., 2017; Brogginini and Costa, 2017; Dimova and Kling, 2018; Ament, Pérez Vidal, Barón Parés, 2018; Dafouz-Milne, 2018; Drljača Margić and Vodopija-Krstanović, 2017; O'Dowd, 2018; Pecorari and Malmström, 2018; Doiz, Costa, Lasagabaster and Mariotti, 2019; Kuteeva, 2019; Molino, 2019; Airey, 2020; Aizawa and Rose, 2020.
English medium of instruction	Chu, 2005; Khan, 2013.
English as the medium of instruction	Yip and Tsang, 2006; British Council/TEPAV, 2013; Ellili-Cherif and Alkhateeb, 2015; McMullen, 2014.
English as a medium of instruction	Tung, Lam and Tsang, 1997; Wu, 2006; Al-Masheikhi, Al-Mahrooqi and Denman, 2014; Belhiah and Elhami, 2014; Ryhan, 2014; Sultana, 2014; Tarnopolsky and Goodman, 2012; Vu and Burns, 2014; Lueg, 2015.
English language as medium of instruction	Ismail et al., 2011.
English-medium (higher) education	Kırkgöz, 2005, 2009; Doiz et al., 2011; Costa and Coleman, 2013; Earls, 2016.
English-medium teaching	Coleman, 2006; Byun et al., 2011; Smit and Dafouz-Milne, 2012;
English-medium higher education	Hellekjaer, 2010; Smit and Dafouz-Milne, 2012.
English-medium courses	Yeh, 2014.
English-medium programs	Dafouz-Milne et al., 2014; Hengsadeekul, Koul and Kaewkuekool, 2014.
English medium programmes	Kirkpatrick, 2011.
English as the lingua franca medium of instruction	Chapple, 2015; Bjorkman, 2010;

English medium content classes	Iyobe, Brown and Coulson, 2011.
English-taught programmes	Costa and Coleman, 2013; Wächter and Maiworm, 2014; Guarda and Helm, 2016; Broggin and Costa, 2017; Costa, 2017.
English-mediated programmes/settings	Campagna and Pulcini, 2014; Molino and Campagna, 2014; Pecorari and Malmström, 2018.
English-medium university	Smit and Dafouz-Milne, 2012.
English-only programmes/degrees	Jeffrey, Rodríguez Melchor and Walsh, 2019.

Table 1 Terms used to refer to EMI

It is worth noticing that in some publications these labels are used interchangeably, even within the same article and oftentimes without any explanation for the term chosen (Macaro, 2018). This underlines the relatively new field of EMI and the lack of a univocal term used within the scientific community.

The acronym EMI refers to the use of the English language as the medium of instruction, usually but not exclusively at university level. In a research study on 513 publications on EMI, conducted by Pecorari and Malmström in 2018, it emerged that EMI can be found at different levels of education, in spite of being the tertiary education the most involved. Indeed, in their report, the vast majority of the studies analyzed (87% of the sample) were set in higher education, while a smaller part (13%) referred to primary and secondary educational settings (Pecorari and Malmström, 2018: 506).

Variation in the literature on EMI is also noticeable in the different definitions provided for it, which in turn emphasize the different aspects of this new methodological approach. Dearden, for example, maintains that: “the term English medium instruction itself is relatively new and no universally accepted definition exists” (Dearden, 2015: 7). The existence of a wide range of definitions stresses the novelty of this field of research and the different perspectives and interpretations given by the EMI scholars. Similarly to the survey on labels, Macaro (2018: 17-18) and Pecorari and Malmström (2018: 498) have gathered the most representative definitions of EMI, which are presented Table 2, combined with others found in the literature on EMI, ranging from EMI as a teaching practice, to teaching and learning

content in a foreign language, to the actual setting in which such teaching and learning take place.

To start with, the acronym EMI generally refers to the use of English as a means to teach academic subjects in those educational settings where most of the participants – students and staff – do not speak English as their first language (L1). Indeed, EMI usually takes place in countries where English is not the native language of most of the inhabitants. Countries as the UK, the US, Canada and Australia, where most of the people have English as their mother tongue, are not usually involved in this phenomenon. However, some scholars do not agree with this point; considering the strong presence of international students in English-speaking countries who do not usually speak English as their L1, they argue that EMI also takes place in Anglophone countries (Fenton-Smith, Humphries, and Walkinshaw, 2017). All in all, most of the EMI programmes are offered in non-English speaking countries where English may have been learnt as a second, third or foreign language (Hellekjaer, 2010; Kim and Shin, 2014; Dearden, 2015; Macaro, 2018; Pecorari and Malmström; Pecorari, 2020).

Definition:	Source:
English-medium instruction is characterized by four main features: 1. English is the language used for instructional purposes. 2. English is not itself the subject being taught. 3. Language development is not a primary intended outcome. 4. For most participants in the setting, English is a second language.	Pecorari and Malmström (2018: 499)
EMI is a setting in which English skills are not specified as a curricular outcome, are rarely planned for, and are not systematically taught, but which are nonetheless expected to be acquired.	Pecorari and Malmström (2018: 502)
The use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions where the first language (L1) of the majority of the population is not English.	Macaro (2018: 19)
EMI implies that content—which is given in English—is the priority. Some incidental language learning is expected due to exposure but without any specific language learning goals. English (language)	Aguilar (2017: 726)

learning is not assessed. Scarce or no collaboration between content and English specialists. There may be little accommodation in terms of methodology, only to guarantee comprehension and understanding of content.	
(..) teaching and learning of content through another language (English).	Dafouz-Milne et al. (2014: 224)
The use of the English language to teach academic subjects in countries or jurisdictions where the first language (L1) of the majority of the population is not English.	Dearden (2015: 2)
English used as the language of instruction, in particular, where English is not the native language of the students.	Kim and Shin (2014: 42)
Instruction through the medium of English, when the goal or the designation has not been specifically to integrate language and content, but only to teach the non-language content through the medium of English.	Yoxsimer Paulsrud (2014: 36)
Teaching content through a language other than that normally used by the students is variously known as L2-medium instruction (in the case of this study, English-medium instruction), (..).	Costa and Coleman (2013: 4-5)
(..) the vehicle of teaching.	Islam (2013: 127)
(...) [when] English is the medium of instruction rather than studied as a foreign language.	Tarnopolsky and Goodman (2012: 58)
English-medium instruction is when non-language courses in for instance medicine, physics, or political science are taught in English, to students for whom it is a foreign language. As often as not, it is also taught by a lecturer who does not have English as a first language (L1).	Hellekjaer (2010: 11)
EMI is closely related to content-based instruction.	Kang and Park (2005: 157)

A discipline-based “late-late” immersion program without any bridging support.	Kang and Park (2005: 158)
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Table 2 EMI definitions

As a matter of fact, English is used as a medium for teaching and learning rather than being taught as an individual subject or language. In such educational settings, EMI lecturers, who are not usually language specialists, do not teach the language but the discipline content only. Consequently, the focus of EMI classes is on the content and the discipline being taught without any specific interest in language development and linguistic outcomes. In this context, EMI degree programmes may or may not have language objectives (Pecorari and Malmström, 2018). This is confirmed by Airey (2017), who maintains that EMI programmes have specific content-related goals which do not explicitly include language learning outcomes.

Nevertheless, although language development is not a primary outcome in EMI settings, some degree of incidental language learning may occur while some subject content is being taught through English (Costa, 2016; Aguilar, 2017; Macaro et al., 2018). Indeed, many scholars report positive expectations of the EMI stakeholders regarding students’ language development and improvement (Tatzl, 2011; Rogier, 2012; Costa and Coleman, 2013; Lei and Hu, 2014; Dearden, 2018; Macaro et al., 2019; Galloway and Ruegg, 2020). As a matter of fact, the long exposure of students to the English language may lead to a certain degree of language learning, even without explicit instruction and in a natural, authentic and incidental way (Costa, 2016; Aguilar, 2017; Macaro et al. 2018). Much research on second language acquisition (SLA) shows that the process of acquiring a new language usually takes place in a natural, unconscious and uncontrolled way, similar to the process of acquiring the L1 and that incidental learning may take place while students are involved in content-oriented tasks (Krashen, 1985; Snow 1985). If some degree of language learning occurs while learning content through English in an EMI classroom, a dual objective would be met incidentally and almost effortlessly (Macaro et al., 2018).

Many EMI scholars believe that a certain degree of language learning and improvement is a desired outcome and a major reason to enroll in such degree

programmes (Tatzl, 2011; Rogier, 2012; Costa and Coleman, 2013; Lei and Hu, 2014; Ackerley, 2017; Costa and Mariotti, 2017; Drljača Margić and Vodopija-Krstanović, 2017; Dearden, 2018; Galloway and Ruegg, 2020). However, little research has been carried out on the role played by EMI in potential students' language improvement and English proficiency.

In the literature, the acronym EMI is often used interchangeably with other educational practices such as CLIL (Content and Language Integrated Learning), ICLHE (Integrating Content and Language in Higher Education), and ETPs (English-taught programmes). The term **CLIL**, which stands for **Content and Language Integrated Learning**, was coined by Marsh in 1994 and introduced in the Council of Europe Resolution in 1995 as an innovative way to teach foreign languages in combination with disciplinary content. The following year, CLIL was adopted by the European Network of Administrators, Researchers and Practitioners (EUROCLIC) (Marsh, 2002, Ranieri, 2013) and since then, it has been considered as an effective teaching and learning method to develop language proficiency and discipline-related content.

According to Coyle, Hood and Marsh (2010) CLIL can be defined as “a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language” (Coyle et al., 2010: 1). It is usually adopted in those contexts where students have already reached a certain language competence and need to strengthen their language skills while learning certain disciplines.

Though, in the literature on CLIL, there is a lack of consensus on its conceptualization, whether it can be referred to as an approach, a method or a model (San Isidro and Lasagabaster, 2019). These two scholars argue that CLIL is “an umbrella term to refer to diverse methodologies which lead to dual-focused education where attention is given to both topic and language of instruction” (San Isidro and Lasagabaster, 2019: 2). Considering the different methodologies used in CLIL settings, they state that CLIL itself cannot be identified as a methodology but as “a set of educational classroom practices in the different contexts of the European continent [...]” (San Isidro and Lasagabaster, 2019: 2). Francomacaro (2011)

maintains that CLIL can be referred to as “a learning environment in which specific methodology and approaches have to be implemented” (Francomacaro, 2011: 37).

The term CLIL is mostly used in Europe, although it can be found elsewhere to refer to that educational setting where the content matter and the language are taught through the medium of a foreign language (Dafouz-Milne and Núñez, 2009; Doiz, Lasagabaster and Sierra, 2014). Instead, when dealing with disciplinary content only delivered through English, EMI is the term mostly used in the literature (Macaro et al., 2018). Other terms and forms for integrating content and language can be found in the literature on higher education, including *ICLHE*, *sheltered content instruction* and *English as a Lingua Franca in Academia* (ELFA) (Hultgren et al., 2015; Pecorari and Malmström, 2018). Macaro et al. (2018) maintain that in North America, the practice of integrating content and language has different labels which range from *immersion* to *content-based learning*, *content-based language learning* and *content-based language education* (Macaro et al., 2018: 37).

Although CLIL is often used as a synonym of EMI, the two terms refer to different contexts and aims. Costa (2016:16) argues that: “The CLIL acronym suggests an integration between language and content”. In fact, the main objective of CLIL is to teach both the content and an additional/second language (L2), whereas in EMI contexts the aim is to teach the content and to convey the meaning through the medium of English, which is used for instructional purposes only (Wilkinson and Zeger, 2007; Smit and Dafouz-Milne, 2012; Dalton-Putter, 2011; Dearden, 2015). In CLIL, both the subject matter and the language play a key role because they are part of the curricular objectives and consequently are both taught and assessed (Macaro, 2018; Coleman et al., 2018). Conversely, EMI courses, as Airey (2016) argues, “[...] have content related learning outcomes in their syllabuses, but no explicit English language related learning outcomes” (Airey, 2016: 73). In other words, in EMI classes the students’ language development is not a primary goal despite the high exposure to the English language, which is used as a tool to convey the meaning.

Another distinction between CLIL and EMI lies in the language used: the former does not mention any specific foreign language to be used in class while the latter refers to the English language only, as the acronym EMI indicates. Following

Dearden and Macaro (2016: 456), “CLIL, unlike EMI, does not specify English as the language being used”. Nonetheless, several scholars have pointed out that it is English the language mostly used in CLIL environments (Wilkinson, 2004; Coleman, 2006; Fortanet-Gómez and Ruiz-Garrido, 2009), which has led to the so-called *Content and English Integrated Learning* (CEIL) (Dalton-Puffer, 2011).

CLIL is widespread at all levels of education, although it is more often used in primary and secondary educational settings where most of the students usually share the same mother tongue. At university level, instead, we can find the term **ICLHE** in the literature, which stands for **Integrating Content and Language in Higher Education**, and which differs from CLIL in the settings and contexts where it takes place (Wilkinson and Zegers, 2008; Costa, 2009, 2012; Pulcini and Campagna, 2015). In both the settings, any language can be used as the means to communicate, content and language are integrated and are teaching and learning goals and outcomes (Costa, 2021) but, according to Costa (2009: 85), “ICLHE is more used with respect to the type of pedagogy adopted and its specific features”.

To conclude, ICLHE and EMI share the same educational environment, that is the higher educational setting and the type of students, which usually include both domestic and international students using a foreign language to communicate and learn. They both focus on the subject matter with the help of an additional language used as a tool to teach (Morell et al., 2014). Instead, they differ from each other firstly in the language used, which in EMI is always English while in ICLHE may vary, and secondly in the curricular objectives, which may or may not include the L2 teaching/learning (Valcke and Wilkinson, 2017).

An alternative perspective of English-medium education was provided by Dafouz and Smit (2014), who developed the **English-medium education in multilingual university settings (EMEMUS)** framework. It highlights the plurilingual dimension of the EMI classes where English and the participants’ L1s coexist. It underlines the privileged role played by English as a medium of instruction at university level but also recognizes the importance of all the languages spoken within the academic community.

Overall, teaching content through the medium of an additional language is a controversial practice, which has provoked different reactions among the

stakeholders involved; benefits but also drawbacks have been discussed about the nature of EMI, about the reasons and factors that have contributed to its implementation and expansion and about the possible implications for the academic context in which this practice is set.

1.4.2 Drivers and opponents

1.4.2.1 Reasons for EMI

At a global level, education has undergone a major transformation in the last decades, especially after 1995, when the World Trade Organization proposed its member states to treat higher education as a service to be sold instead of a human right and a common good for individuals. The General Agreement on Trade in Services (GATS)¹² (1995) fostered the trade of education and the marketization of higher education which in the long run have led the universities to yearn for top positions in university rankings, stronger academic reputation and international prestige (Tilak, 2011; Hultgren et al., 2015; Phillipson 2013, 2015). Through the introduction of the GATS, the universities have begun to be regarded as markets and commodities whose main goal has been to increase the institutional incomes and to attract more fee-paying students. This has inevitably paved the way for the internationalization of higher education, the increase of private universities and the provision of numerous EMI programmes all over the world.

At the European level, the initial awareness of an international education, of more innovative universities and academic collaborations began in 1998 with the Sorbonne declaration, signed by the Ministers of education of France, Germany, Italy and the UK. Its main goals were to promote a standardized European educational system and to strengthen the European higher education system worldwide. These aims were confirmed the following year, in the **Bologna**

¹² The General Agreement on Trade in Services (GATS) is a treaty of the World Trade Organization which was established in 1995. Its main objectives were to liberalize trade in services and to ensure its members an equal treatment in the foreign markets (Tilak, 2011). Its implementation has had a significant impact also in education, especially at tertiary level, through the marketization of higher education in which students have become consumers of a service (education).

Declaration, a document that was originally signed by 29 European countries. The main objectives discussed and confirmed in the Bologna process were the following:

- establish a European Higher Education Area (EHEA);
- develop a European educational dimension;
- promote a standardized educational system, based on a three cycles system (undergraduate, postgraduate and doctorate);
- establish the European Credits Transfer System (ETCS);
- foster international mobility across Europe;
- increase attractiveness of European universities and their academic prestige in the world;

The Bologna Declaration fostered the creation of the European Higher Education Area (EHEA) where students, lecturers, scholars and administrative staff could travel without any restriction throughout Europe. The intention was to increase mobility opportunities, academic exchanges and scientific collaborations among European universities and to provide opportunities to study and conduct research in different educational environments (Phillipson, 2009). This area would facilitate international contacts and relations and strengthen the European attractiveness and prestige in the academic global market. The standardization of the educational systems and the adoption of the European Credits Transfer System (ETCS) would allow students to enroll in different degree programmes, to move freely within the European universities and to apply for future jobs, with the acceptance of their certifications and qualifications (Macaro, 2018). The introduction of the Bologna Declaration and the call for internationalization has resulted in more mobility opportunities and in the implementation of EMI programmes throughout Europe, beginning from 1999 (Wilkinson, 2005; Wächter and Maiworm, 2014).

The expansion of EMI programmes in Europe is due to different **factors** and the internationalization of HE is high on the list. Indeed, the International Association of Universities carried out a survey of 745 universities in which it emerged that 87% of them have included the internationalization goal as part of their institutional strategies (Egron-Polak and Hudson, 2010). Coleman (2006) has

identified seven drivers which have contributed to the Englishization of HE and the implementation of EMI courses:

- (1) CLIL,
- (2) internationalization,
- (3) student exchanges,
- (4) teaching and research materials,
- (5) staff mobility,
- (6) graduate employability and
- (7) the market in international students (Coleman, 2006: 4).

The introduction of CLIL courses since 1995 at school level has boosted confidence in using an L2 as a means to teach and learn the school disciplines in almost exclusively monolingual settings, as in the case of Italian schools. Together with CLIL, the expansion of EMI programmes has also paved the way for empowering the status of English as a global language also in the educational systems. Indeed, the linguistic power of English in many domains and its recent use in education have contributed to the growth of learning and teaching materials and academic publications written in English. As a consequence, a considerable percentage of educational resources is more accessible in the English language, compared to other European languages (Graddol, 1997; Galloway et al., 2017).

Macaro (2018) confirms that another fundamental driver towards the Englishization of HE has been the need to internationalize academia within a global panorama. This has led to an increase of students and staff mobility, the adoption of EMI programmes totally offered in English and the subsequent growth of job opportunities for graduate students (Smit and Dafouz-Milne, 2012; Pulcini and Campagna, 2015). Doiz et al. (2011) maintain that European universities have begun to offer EMI programmes because they aim at attracting international students, helping and preparing domestic students for future jobs and strengthening their international reputation (Doiz et al., 2011: 347). As a matter of fact, it is argued that in the last twenty years, European universities have begun to be interested in attracting a wider students' population which included full fee-paying overseas students and in recruiting international researchers and lecturers to gain more

academic prestige (Wächter and Maiworm, 2008; Costa and Coleman, 2013). As regards international students, a study conducted by UNESCO and cited in the “The Economist Intelligence Unit” (2020) reports a growing number of international students enrolled in foreign universities; as a matter of fact, almost 4 million students enrolled in degree programmes abroad in 2011, a number which grew in 2017, reaching almost 5 million enrollments and is expected to rise to 7 million by 2030 (The Economist Intelligence Unit, 2020: 21).

In Italy, the CRUI (Conference of Italian University Rectors) report published in 2018 confirms that the decision to offer EMI programmes is an institutional strategy to internationalize Italian higher education. At a global level, the data obtained from a study (Dearden, 2015) of 55 countries around the globe (Europe, North and South America, Africa and Asia) highlight several common reasons for offering EMI courses:

- (1) to internationalize higher education;
- (2) to expand international relations;
- (3) to attract more domestic and international students;
- (4) to increase institutional income;
- (5) to develop students’ intercultural skills;
- (6) to improve students’ English proficiency;
- (7) to provide students with more opportunities to study and work abroad (Dearden, 2015).

Similar findings have been reported in a survey administered to 78 Italian universities, developed by Broggin and Costa (2017), in which it is argued that the main reasons to establish EMI programmes in Italy are: improving the international profile of the institutions and attracting more enrolled foreign students.

Overall, many universities in the world have opted for EMI programmes to increase the number of enrollments and their institutional income, to offer students a more diversified educational experience and prepare them for the international labour market, and finally to increase international collaborations with foreign universities (Altbach and Knight, 2007; Doiz et al., 2011; Wilkinson, 2013; Pulcini and Campagna, 2015). An additional motivating factor to implement EMI

programmes and to use English as the means to teach and learn is related to the wish to compete in the world university rankings and to get involved into the ongoing competition with prestigious Anglophone institutions in the UK and in the US (Coleman, 2006; Kirkpatrick, 2014). Improving the students' language competence and providing them with more job opportunities and possible career advancement are other key reasons to adopt EMI programmes, as in the case of China and Japan (Hu et al., 2014; Galloway, Kriukow and Numajiri, 2017; Aizawa et al., 2020) where attending English-taught programmes is perceived as “a more authentic way to improve English proficiency” (Galloway, 2017)¹³ compared to the traditional second language teaching methods.

To sum up, the extensive body of literature on EMI confirms that most of the universities involved in this phenomenon have similar reasons to internationalize their institutions and to adopt English as the medium of instruction. Its expansion, together with the phenomenon of Englishization, have been driven by economic, social and political factors, e.g., wish to increase academic prestige in the global panorama; reach top positions in global university rankings; increase institutional incomes; create a multicultural academic community; expand international relations; and improve students' English proficiency.

1.4.2.2 Drawbacks of EMI

Despite the impressive rise of EMI programmes all over the world and the strategic objectives set in the institutional policies and in the Bologna Declaration, several issues and concerns have been expressed by scholars and linguists. For instance, some argue that the aims of the Bologna declaration and the subsequent internationalization of higher education have promoted the linguistic hegemony of English and undermined the dimension of multilingualism fostered by the European Commission (Smith, 2004; Kirkpatrick, 2011; Doiz et al., 2011, 2013; Philippon

¹³ The introduction of EMI programmes has been strongly encouraged by several policies and initiatives both in China and Japan, in order to increase academic prestige, welcome new enrolments and improve students' English proficiency. Retrieved from: <https://www.britishcouncil.org/voices-magazine/how-effective-english-medium-instruction-emi>

Last access: 20/01/2021

1992; 2009; 2012; Costa and Coleman, 2013; Molino and Campagna, 2014; Earls, 2016; European Commission, 2018). As a matter of fact, the European Union and the Council of Europe have always supported **plurilingualism** and **multilingualism** within the continent, two concepts that emphasize the different aspects of using more than one language, as also noted by Cots, Garrett and Lasagabaster (2016)¹⁴. According to the Article 2 of the European Cultural Convention, stipulated in Paris in 1954, each European country should encourage the study of its own language and culture and promote multilingualism throughout Europe. As a consequence, language policies should protect and respect linguistic diversity, which is a fundamental principle of the European Union. As stated in a report of the European Commission:

The harmonious co-existence of many languages in Europe is a powerful symbol of the European Union aspiration to be united in diversity (European Commission 2018:5).

Although in the Bologna Declaration there is no reference to any specific language, the increasing use of English within academia and the adoption of EMI programmes has led to the “Englishization” of higher education and of the curricula (Costa and Coleman, 2013). Phillipson (2012) maintains that: “what emerges unambiguously is that in the Bologna process, ‘internationalisation’ means ‘English medium higher education’, an apparently unchallenged acceptance of English linguistic hegemony” (Phillipson, 2012: 147). Similarly, Costa and Coleman (2013) state that “it seems impossible to separate the Bologna Process from internationalisation, and internationalisation from the Englishisation of higher education” (Costa and Coleman 2013: 17). Phillipson (2013) also argues that the European universities have been completely marketized and transformed into businesses where English

¹⁴ The Common European Framework of Reference (CEFR) reports that whereas the term *multilingualism* refers to “the knowledge of a number of languages, or the co-existence of different languages in a given society” (CEFR 2001:4) *plurilingualism* consists in the use of different languages and of the development of “a linguistic repertory, in which all linguistic abilities have a place” (CEFR 2001:5). As Cots, Garrett and Lasagabaster (2016) suggest, while in a multilingual university the knowledge of more than one language is not compulsory because of the use of a sole official language within that educational context, studying in a plurilingual university implies the knowledge and the use of all the official languages.

is the main language used and academic ‘services’ are sold to young customers/students. Therefore, the internationalization of HE and the provision of EMI programmes on a large scale are considered by many scholars as indirect ways to foster monolingualism within the European universities (Wilkinson, 2017).

The extensive use of English in several sectors, such as education, science and business are perceived by some scholars as a **threat to small and local languages** and national cultures (Phillipson, 2003; Kırkgöz, 2005; Jensen and Thøgersen, 2011; Cots, 2013; Hultgren, 2012, 2013; Wilkinson, 2017). As a matter of fact, many languages are being substituted by English in specific domains, leading to what has been called ‘**domain loss**’ in local languages (Airey, 2004; Hultgren, 2013; Kuteeva and Airey, 2014). As Hultgren (2016) argues, “the term itself is partly a Nordic coinage” (Hultgren, 2016:153), even though the concept of domain loss had already been discussed in the past and in other contexts. It occurs when the specific terminology in a certain language is replaced by a stronger language, that in this case is English. Hultgren (2013) defines the domain loss as “(..) the national language ‘losing terrain’ to English” (Hultgren, 2013: 166). In the Nordic countries, it has been long debated and partially tackled with the introduction of ad-hoc language policies, such as the “Parallel Language Use” (See Section 1.5.1) (Campagna and Pulcini, 2014). Phillipson (2009) asserts that the sectors mostly affected by the constant use of English and by domain loss are “research publication, higher education, business and international relations” (Phillipson, 2009:337). Similarly, Santulli (2015) maintains that the scientific sector has been strongly influenced by the growing use of English (Santulli, 2015). Besides, the risk of domain loss clashes with the promotion of multilingualism and plurilingualism in academia and may lead to monolingualism, impoverishment of smaller languages and loss of their official status. Nonetheless, when talking about Denmark, Hultgren (2016) argues that the issue of domain loss has probably been exacerbated because there has not been such a significant domain loss in the Danish language (Hultgren, 2016).

In addition, some linguists argue that the excessive use of English in academia may lead to possible future **diglossia**¹⁵ (Phillipson, 2006; Bocanegra-Valle, 2013; Hultgren, 2016), which is typical of the ESL countries (Görlach, 2002), and to the impoverishment of the quality of education (Airey, 2004; Pulcini, 2015). Moreover, another risk due to the Englishization of HE may be the loss of interest in foreign language studies (Pulcini and Campagna, 2015); in the case of international students, it may negatively affect the educational and cultural experience of many international students studying in EMI programmes in foreign countries, who may be interested in the host language and culture (O’Dowd, 2018).

Phillipson (1992; 2003; 2018) is a politically and socially active scholar who has always criticized the excessive use of English and the development of monolingualism in many domains and non-Anglophone territories. He associates the use of English in education and the growth of EMI programmes with the dominance of powerful Anglophone countries such as the UK and the US; in his view, by implementing new strategies to internationalize HE, the European universities are massively turning to English. Thus, the EMI phenomenon is paving the way to a new form of **linguistic imperialism**, due to the strong relations between global economy, politics and education (Phillipson, 1992). He interprets linguistic imperialism as:

[...] a form of linguicism, a favouring of one language over others in ways that parallel societal structuring and inequality through racism, sexism and class. This occurs within countries and also in relations between internationally powerful countries and other countries. Linguicism serves to privilege users of the standard forms of a dominant language, which are typically acquired in education systems (Phillipson, 2018:4).

¹⁵ The term *diglossia* refers to a situation where two or more varieties of a language are used within a community. It usually implies the coexistence of high and low varieties of that language. The former is more formal and generally used in education, government and other institutional contexts; instead, the latter is more used in daily-life conversations and informal situations (Ferguson, 1959; Sayahi, 2017). Therefore, diglossia is a type of bilingualism which influences the linguistic behaviour of the speakers.

For instance, in the Arab world, classical Arabic is the high variety while Arabic of Egypt and Morocco are considered the low varieties of the same language.

Retrieved from: <https://www.britannica.com/topic/diglossia> Last access: 21/01/21

He supports the assumption that monolingualism and linguistic hegemony lead to **social inequalities** and influence cultural identity, beliefs, languages and linguistic diversity. In his view, the persistent use of English may threaten the status of local languages and the survival of minority languages and dialects (Phillipson, 2006). Moreover, some scholars argue that the “Englishization” of HE goes hand in hand with the unconscious acceptance of Anglo values (Coleman, 2006; Phillipson, 1992, 2006, 2018; Kirkpatrick, 2011; Santulli, 2015).

The internationalization of HE and the excessive and sometimes even unreasonable use of English is exacerbating social-cultural differences, especially in those situations where “[...] young people [...] are unable to access prestigious university education, which, in many cases, is becoming synonymous with EMI” (Macaro, 2018: 294). As a consequence, EMI may contribute to the gap between social classes and may compromise possible future opportunities for students. Social inequalities and discrimination due to the linguistic hegemony of English also include language competence and English proficiency. As a matter of fact, in many EMI programmes students are required to have a good level of English proficiency and the lack of it may preclude some of them from the access to those degree programmes (Cicillini, 2021; Macaro, 2018). This is also the case of those students who have a good knowledge of the discipline taught but their low proficiency levels do not allow them to enroll in certain degree programmes. Indeed, English proficiency is crucial to the students’ enrolments in EMI programmes and to a thorough understanding of the content delivered.

The issue of **inadequate language proficiency**, both for students and lecturers, has been identified as one of the major challenges of high-quality education through the medium of English (Coleman, 2006; Dafouz-Milne, 2007; Costa and Coleman, 2013; Pulcini, 2015; Drljača Margić and Vodopija-Krstanović, 2018; Macaro et al., 2018; Clark and Guarda, 2018). Consequently, there is still the urgency to establish specific entry requirements to students who want to enroll in EMI programmes (Cicillini, 2021) and to provide lecturers with appropriate training (Coleman, 2006; Guarda and Helm, 2017; Drljača Margić and Vodopija-Krstanović, 2017; Clark and Guarda, 2018). This is even truer in the South of

Europe where the knowledge of English is lower than the Nordic countries (Wächter and Maiworm, 2014; Education First, 2019, 2021).

In addition, other challenges to the implementation of EMI programmes have been identified, i.e., feelings such as uneasiness and inadequacy due to insufficient language skills (Coleman, 2006); high drop-out rates and exclusion, especially in certain underdeveloped countries (Marsh, 2006); wider gap between skilled and less skilled students (Airey and Linder, 2006; Bolton and Kuteeva, 2012; Doiz et al., 2013).

To sum up, it can be observed that EMI is a relatively new phenomenon which is currently growing in many parts of the world and is undoubtedly a tangible result of the process of internationalizing HE. Despite its rapid expansion, it is following different paths and proceeding at different paces, according to the national and institutional needs and strategies. This explains the reasons why it has raised controversial opinions on its implementation, depending on the forthcoming benefits or supposed negative consequences that EMI may exert on education. Indeed, whereas its implementation has been driven by the need to gain more academic prestige, attract a more diversified students and staff population and increase mobility, it has also raised awareness of the issues surrounding its adoption, e.g., domain loss, increase of monolingualism and insufficient levels of English proficiency to cope with the challenges EMI may pose to.

As a consequence, in order to fully exploit the EMI potentials, scholars suggest that both internal actions, such as ad-hoc language policies and institutional strategies and external actions, such as cooperation between universities and stakeholders, are necessary.

1.5 Global trends towards EMI

The global spread and rise of EMI have been the object of an extensive body of literature and reports conducted in the last twenty years. In Europe, the three systematic studies carried out by Wächter and Maiworm in 2002, 2008 and 2014 show an incessant increase of EMI programmes in European institutions, both at bachelor (20%) and master (80%) level. As reported in a study conducted by Brenn-

White and Faethe (2013), a 38% increase was registered in the number of postgraduate programmes activated in Europe through the medium of English, which ranged from 3,701 to 5,258 programmes in less than two years (2011-2013). The data were collected from an online database - *studyportals.eu*¹⁶ - and compared with an investigation conducted the year before (Brenn-White and van Rest, 2012). In addition, a 340% increase was registered between 2001 (725 EMI programmes) and 2007 (2,389 programmes) in Europe, as noted by Doiz et al. (2013), which peaked in 2014 with the activation of 8,089 programmes in 28 countries (Wächter and Maiworm, 2002, 2008, 2014; Doiz et al. 2013). In another survey of 70 European universities, carried out by O’Dowd (2018) during the academic year 2014/2015, it was reported that 40% of the respondents offered both single subjects and full degrees (BA and MA degree programmes) in the English-only formula; single subjects taught through English were offered by 24%; just a small percentage (7%) of respondents stated that no EMI courses were offered in those universities (O’Dowd, 2018).

This wave of Englishization within the universities has clashed with the promotion of linguistic and cultural diversity, boosted by the European Union and considered as a “European paradox” (Phillipson, 2006: 72). Indeed, on the one hand, English has been perceived as an opportunity for more academic prestige and international collaboration; on the other hand, it has been identified as a possible threat to local languages and linguistic integrity. Pulcini and Campagna (2015) argue that the growing number of EMI programmes in Europe “[...] responds to the contradictory European imperative to homogenize education by covertly adopting a common lingua franca whilst maintaining linguistic diversity [...]”, (Pulcini and Campagna, 2015: 67). As a consequence, the growing use of English in academia has become a transnational issue to tackle (Santulli, 2015: 270)

Despite the impressive rise, EMI in Europe is far from being uniform and emphasizes a clear division between Northern and Southern European countries. This geographical division has been discussed by Campagna and Pulcini (2014), who have pointed out the existence of “two Europes”, in terms of both educational policies and English proficiency. As a matter of fact, in each European country EMI

¹⁶ <https://studyportals.com/>. Last access: May 2020.

has had a different evolution and encountered diverse degrees of resistance, as in the case of Germany and the Nordic countries where it has been introduced almost effortlessly (Dimova et al., 2015: 2). Indeed, the institutions located in the north of Europe have had a longer tradition of EMI programmes and are at the forefront of this trend, compared to the Southern countries (Ackerley et al., 2017). This has been probably facilitated by the long tradition of bilingual education in the north of Europe, the early exposure to the English language in people's daily life and the consequent high levels of English proficiency (Airey, 2004; Wächter and Maiworm 2014; Education First, 2021).

The university of Maastricht is considered the pioneer of EMI, since it was the first institution to offer EMI programmes in Europe, starting from 1987 (Coleman, 2006; Costa, 2009; Wilkinson, 2013; Campagna and Pulcini, 2014). Soon after the Netherlands, many **Nordic countries** began to introduce EMI programmes, namely Denmark, Finland, Norway, Sweden and Iceland (Brenn-White and Van Rest, 2012; Airey et al., 2017). This has inevitably led to a sharp increase of English proficiency of most of the inhabitants, as shown in several EF English Proficiency Index reports, which have repeatedly elected them as the countries with the highest levels of English proficiency, among numerous non-English speaking countries in the world. The Eurobarometer survey, published in 2005, reports that 88% of Dutch people have a very good level of English; the data have been confirmed in a new survey published in 2012 (Eurobarometer, 2012), which shows that 90% of the respondents in the Netherlands speaks English as a foreign language, followed by Denmark (86%), Sweden (86%) and Finland (70%). The Nordic countries have also occupied the top positions of several EF English Proficiency Index reports and have been labelled as very highly English proficient countries, since 2011 until the most recent report, published in 2021 (Education First, 2011; 2021). Possible explanations for the high level of English proficiency in Northern Europe, may be because the Nordic countries' first languages "are typologically close to English", as suggested by Macaro (Macaro 2018: 85), English is used along with their L1 in their everyday life and films and TV series are usually left in their original version without dubbing into their L1, as is often the case of Italy (Minutella, 2015).

The **Mediterranean countries**, on the contrary, have shown a slower spread of the English-only formula in higher education. For instance, countries such as Italy, Spain and France have encountered a stronger resistance to the internationalization of their universities and to the implementation of EMI programmes, mostly because of political and linguistic issues, limited financial resources and low levels of English proficiency, both in students and lecturers (Arnó-Macià and Mancho-Barés, 2015; Dafouz-Milne and Camacho, 2016). Indeed, the process of internationalization may have been misinterpreted and identified as a threat to their linguistic integrity and richness, as a way to foster monolingualism and as a result of the Englishization of higher education (Campagna, 2017).

Moreover, the lower level of English proficiency in Southern Europe countries (Wächter and Maiworm 2014; Arnó-Macià and Mancho-Barés, 2015; Dafouz-Milne and Camacho, 2016), and specifically the inadequate level of students' English proficiency in EMI classes, have been identified as a major challenge for the effective implementation of English-mediated programmes (Dafouz, 2007; Costa and Coleman, 2013; Hutlgren, Jensen and Dimova, 2015; Lasagabaster, 2015; Guarda and Helm, 2017; Drljača Margic and Vodopija-Krstanovic, 2017). Interestingly, students' lack of English proficiency has also been identified by some EMI lecturers as an obstacle to students' effective enrolment in some French and Spanish universities (Napoli and Sourisseau, 2013; Doiz et al., 2011). This may also be due to sociolinguistic differences, because Mediterranean countries are less exposed to the English language compared to the Nordic countries, not only at university level but also in everyday life (Doiz et al., 2011).

In Europe, EMI has been especially adopted in certain disciplinary areas such as business, law and social sciences (35%), sciences (23%) and engineering, manufacturing and construction (18%) (Wächter and Maiworm, 2014). This may be related to the status of English as the language of the scientific community to attend conferences and publish research works, especially in the 'hard science' sector, in contrast with the 'soft science' publications which tend to be written in the writers' mother tongues (Costa, 2017).

In the last two decades EMI has also gained ground in Asia, as reported by Galloway et al., 2017. In **Japan**, EMI programmes began to be offered since the beginning of the 21st century as a way to promote the Japanese culture in the global panorama and to attract more international students. Indeed, EMI is principally addressed to international students and not specifically to local ones because “Japan’s concept of internationalization is about promoting Japan to the international community, not about becoming part of it”, as stated by Hashimoto (29: 2013). Despite this slightly different attitude towards EMI compared to other countries, the trend is still on the rise, and it has been observed that between 2008 and 2010 roughly 30% of the undergraduate degree programmes were taught through English (Galloway et al., 2017). Its introduction is mainly due to the intention to increase the country’s prestige and competitiveness in the world and provide the students with a more international and multicultural academic experience and better English competences (Brown, 2014; Bradford, 2016).

From the beginning of the 21st century onwards in **China** there has been a significant growth not only of EMI programmes but also of bilingual and joint programmes with foreign institutions, both in the public and private sectors (Galloway et al., 2017; Hu, 2019). In 2000 the Chinese Ministry of Education decided to increase the number of English-taught programmes in mainland China, both at school and university level (Hu, Li and Lei, 2014). This strong interest towards EMI has been mainly driven by the necessity to improve the English teaching methods and the students’ English proficiency, starting from the assumption that EMI can be an effective and practical way to improve language competences (Huang, 2006; Hu, 2009; 2019; Lei and Hu, 2014). The spread of English in Hong Kong instead dates back to its colonial past and the British colonial power (1841 – 1997) when the rulers imposed the knowledge of English, at least at a beginner level for all the inhabitants (Evans, 2003; 2008a; 2008b; 2011). Nevertheless, the proliferation of EMI programmes peaked in the 1970s when English was used as the main language of instruction along with Cantonese. This growing trend has also been noticed in Taiwan (Yang, 2015) and South Korea (Kim, 2017) while little research has been published about its implementation in Southeast Asia. In Philippines and Malaysia, English is often used as the medium of education

even though its expansion has recently raised concerns about language diversity and identity (Ali, 2013).

In the **Middle East**, a growing interest towards an English-mediated education has been registered since the 1980s. In Saudi Arabia, EMI has been adopted by different universities and across several disciplinary sectors, especially in the healthcare sector and nursing schools because of the shortage of local nurses. This has led to the necessity of a common language to be used in such contexts that has been English among the staff members and Arabic in nurse-patient interactions (Salton, 2005; Suliman and Tadros, 2011). Though, the constant rise of EMI programmes in Qatar and the United Arab Emirates (UAE) has begun to raise skepticism and concern about the excessive use of an L2 and the possible loss of the Arabic language status (Belhiah and Elhami, 2015). By contrast, little is known about HE and the process of internationalization of Africa and South America, probably because in those areas EMI has not been implemented yet (Macaro et al., 2018).

Overall, a significant growth of EMI programmes has been registered in many countries in the world in the last few years for several and often shared reasons. Though, its introduction has made necessary the reformulation and establishment of new educational and language policies which should consider the new issues and challenges posed by EMI.

1.5.1 Language policies

The growth of EMI in non-English speaking countries, as in the case of Europe, has been exponential and has been identified both as a top-down decision, taken by the institutions for financial and political reasons (Coleman, 2006; Macaro et al., 2018), and as a bottom-up decision, in which all the stakeholders recognize the educational value of such a shift towards EMI (Doiz et al., 2011; Aguilar and Rodríguez, 2012; Dafouz-Milne, 2018).

The extensive use of English in academia and the proliferation of EMI programmes have led several institutions to reformulate their educational and language policies in order to cope with the new challenges posed by the shift

towards the English-only formula. The European Union has always fostered linguistic diversity and multilingualism throughout Europe by implementing language policies that would respect these principles. In 1995, the European Union published the “White Paper on education and training” in which European citizens were encouraged to speak at least two Community languages plus the L1. In the document it is argued that:

“Proficiency in several Community languages has become a precondition if citizens of the European Union are to benefit from the occupational and personal opportunities open to them in the border-free Single Market. (...) it is becoming necessary for everyone, irrespective of training and education routes chosen, to be able to acquire and keep up their ability to communicate in at least two Community languages in addition to their mother tongue” (White Paper on education and training, 1995: 44).

As regards HE, in 1999 the Bologna process (See Section 1.4.2) paved the way for a significant shift towards the internationalization of the European institutions and for a closer collaboration among the European countries. It led to more opportunities of mobility within the international environment and of provision of EMI programmes. In 2003, the Commission of the European Communities confirmed the objectives set the previous years, which included the importance of language and cultural diversity and the ‘mother tongue plus two other languages’ policy. This was introduced in a document named “Promoting Language Learning and Linguistic Diversity: An Action Plan 2004-2006”. Its main objectives were to develop the ‘mother tongue plus two other languages’ policy, CLIL, the ERASMUS¹⁷ project and the Bologna process. As regards the ‘mother tongue plus two other languages’ policy, it claims the value of language learning and language diversity and underlines the necessity for European citizens to be proficient in two

¹⁷ ERASMUS stands for ‘European Region Action Scheme for the Mobility of University Students’; it is a European project, launched in 1987, which aims at increasing university student exchange and mobility and at enabling them to spend part of their academic studies in a foreign university. In 2014 the European Union launched the ERASMUS +, which involves more young people than the ERASMUS and includes school projects, university exchanges and job experiences. Retrieved from: https://ec.europa.eu/assets/eac/education/library/statistics/erasmus-plus-annual-report_en.pdf . Last access: 04/07/2020.

foreign languages, along with their L1 (Commission of the European Communities, 2003). Besides, the document stresses the role that European universities should play in enhancing multilingualism through the use of the highest number of foreign languages.

The growth of English as the language mostly used in education has also required the establishment of new language policies that would protect minority languages and cultures. The Nordic countries have been at the forefront of the provision of EMI degree programmes in Europe but also the first countries to tackle language issues related to domain loss and limited use of the official languages in higher education. As a matter of fact, Airey et al. (2017) argue that the Northern European languages are currently spoken by a small number of citizens and may be endangered by the use of English in certain specialized domains where no alternative is available¹⁸; Gunnarsson (2001) asserts that this may lead to future diglossia, which would consist in using two separate languages or varieties of one language for different social situations (See Section, 1.4.2.2). Under these conditions, English would be used in education and in formal contexts whereas the other official languages for everyday communication and administrative procedures (Airey, 2004; Phillipson, 2006; Coleman, 2006; Bocanegra-Valle, 2013; Airey et al., 2017). Therefore, protecting and maintaining the status of official languages has become extremely demanding (Airey et al., 2017).

In 2007, to foster multilingualism and protect the official status of the Nordic languages the ‘Declaration on a Nordic Language Policy’ was published whose main objective was to introduce the **parallel language use**. This language policy consists in “the concurrent use of several languages within one or more areas. None of the languages abolishes or replaces the other; they are used in parallel” (Nordic Council of Ministers, 2007: 93). The document stresses the importance of all the official languages, especially in contexts where a foreign language – as in the case of English - is more frequently used than others. It seeks to safeguard the

¹⁸ The music industry, for instance, has been impressively affected by the use of English. For instance, the *European Song Contest* is a yearly music event which was held for the first time in 1956 and since then has welcomed many European artists in their editions. In recent years, most of the songs have been sung in English, with the exception of the use of some French, Italian and Spanish. Retrieved from: <https://eurovision.tv/story/eurovision-2020-songs-in-review>. Last access: 25/01/2021

local language, to promote the co-existence of English and other Nordic languages and foster multilingualism and plurilingualism within academia (See Section 1.4.2.2). Nonetheless, the parallel language use policy has been criticized by some scholars (Airey and Linder, 2008; Bolton and Kuteeva 2012; Kuteeva and Airey, 2014; Kuteeva and McGrath, 2014) because of the ambiguity of its pedagogical aims and the unclear instructions on how the policy could be implemented within the educational settings; Kuteeva and Airey (2014: 536) described it as an “unoperationalised political slogan”. They argue that the parallel language use policy could be beneficial if they knew how to implement it across the different academic subjects (Kuteeva and Airey, 2014). As a matter of fact, they envisage possible challenges for the local languages such as domain loss and specialized terminology, especially in the scientific disciplinary sectors that are “(..) at risk of becoming entirely Englishised” (Campagna and Pulcini, 2014: 179; Kuteeva and Airey, 2014).

All in all, in the Nordic countries as well as in Germany, EMI has been rapidly and positively welcomed (Hultgren, 2013; Kuteeva and Airey, 2014; Hultgren et al., 2015) whereas in countries such as France (Pagèze and Lasagabaster, 2017), Turkey (Kirkgöz 2009; Arkın and Osam, 2015; Dearden, 2015; Macaro, Akincioglu and Dearden, 2016), Croatia (Drljača Margić and Vodopija-Krstanović, 2015), Italy (Costa and Coleman, 2013; Campagna and Pulcini, 2014; Guarda and Helm, 2017) and Spain (Cots 2013; Doiz et al., 2011, 2013; Arnó and Mancho-Barés, 2015) its introduction has clashed with the overall national limited proficiency in English and political and linguistic issues.

As a consequence, the growing use of English threatens to undermine the institutional policies of many European countries which need to be extremely effective in order to safeguard the national languages (Wilkinson, 2016). Phillipson (2015) argues that “there is a clear need for language policy-makers and scholars to scrutinise whether the promotion of “global” English reinforces English linguistic hegemony” (Phillipson, 2015: 36). In addition, some authors argue that language diversity is disappearing, especially as regards smaller languages and a certain

degree of language ecology¹⁹ should be ensured and respected (Pennycook, 2004; Philippon, 2009; Doiz et al., 2011). A language ecology balance would be ideal because it occupies the central position of a linguistic continuum where language rights and language imperialism are at the extremes (Pennycook, 2004). In this view, English “may not always threaten other languages directly but may do so by upsetting an ecology of languages” (Pennycook, 2004: 214). Thus, the language ecology approach may be helpful to fully understand language diversity, respect the nature of language and promote them within the institutional policies.

In Asia, specifically in China, the Chinese Ministry of Education introduced the provision of EMI programmes into the “Suggestions on Strengthening Higher Education and Improving Teaching Quality” document (2001) as one of the twelve top goals to reach within three years. This strategic policy aimed at introducing English as the medium of instruction in some prestigious universities (as in the case of Zhejiang University) at undergraduate level (5% to 10% of the overall programmes) and mostly in science and engineering courses (Hu, Li and Lei, 2014). In Japan, the growth of EMI was accelerated by the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) when in 2009 it proposed the “Global 30 Project” which aimed at implementing EMI degree programmes in thirty Japanese universities and attracting around 300,000 international students by 2020 (Yonezawa, 2010). The project was later redesigned by the introduction of more funding and by involving thirty-seven Japanese universities. The introduction of EMI in Japan was principally driven by the need to gain academic prestige in the university rankings and was not specifically addressed to the Japanese students themselves but to international students who may wish to know more about the Japanese culture while studying through English (Hashimoto, 2013). In South Korea, the provision of EMI programmes in HE was boosted by the “Globalization Project”, proposed by the President Nampyo. The project’s objectives were to offer new EMI programmes every year (roughly 10% more every year) and to transform all the HE courses into English by 2010 (Byun et al., 2011).

¹⁹ The expression *language ecology* refers to “the study of interactions between any given language and its environment” (Haugen, 1972: 225). In order to understand and respect language diversity, they should not be regarded as monolithic entities but as a mixture of social, cultural and physical factors (Pennycook, 2004).

In the Middle East and specifically in the Kingdom of Saudi Arabia, English-mediated education is compulsory at university level while at school level students can learn and study through their L1. This has led to several language issues in the transition from school to HE, which have been partially resolved by introducing the “preparatory year programme”; it mainly consists in preparing the lower English proficient learners to study in English in HE. This is also the case of the United Arab Emirates, which have a longer tradition of English-mediated education (since 1970s) and where most of the state universities have to offer EMI degree programmes as a way to internationalize HE (Suliman and Tadros, 2011; Belhiah and Elhami, 2014). Although the growth of EMI in the Arab world, some concerns have been raised about the threat to the Arabic language, the national constitution and the religion of Islam (Belhiah and Elhami, 2014).

1.5.2 Language policies in Italy

As in most of the European countries, the Bologna process in 1999 paved the way for the internationalization of the Italian higher education system and enhanced the use of English within academia through the implementation of EMI single courses and full degree programmes taught in English. Despite the strong interest to modernize the tertiary level of education, the limited level of national proficiency in English has been identified as a major challenge to achieve the goal of internationalization. As a consequence, in the last twenty years, several reforms and policies have been issued to foster foreign language learning at all the levels of education.

In the 1990s and before the Bologna process, English learning had already been introduced in primary schools and had begun to replace the study of the French language, which in the previous years used to be the most studied foreign language at school level (Tosi, 2008). In 2003, English became a compulsory subject for technical and vocational schools (Campagna and Pulcini, 2014) with ‘**Legge Moratti 53/2003**’. The reform also promoted the use of CLIL at secondary school level, resulting in the teaching of some curricular subjects in English in the last two years of ‘liceo linguistico’ (secondary school where two or more foreign languages

are taught as opposed to only one) and in the last year of all the other secondary schools (Costa and Coleman, 2013; Campagna and Pulcini, 2014; Pulcini and Campagna, 2015).

A turning point in Italy for the internationalization of the tertiary level of education and the reorganization of the educational system was the Bologna process in 1999 and the ‘**Legge Gelmini 240/2010**’. The latter reinforced the objectives set in the Bologna declaration through the implementation of EMI programmes, mobility opportunities for students and staff and international collaboration with foreign institutions (Costa and Coleman, 2013; Campagna and Pulcini, 2014; Molino and Campagna, 2014; Costa, 2021). In addition, the Italian universities were given the “autonomous status” which let them have a certain degree of freedom in the organization of their academic programmes, although they still had to be aligned to the general regulations defined at national level by the MIUR²⁰ (Pulcini and Campagna, 2015).

In the following years, the provision of EMI programmes rose steadily despite its different geographic distribution in the north, centre and south of Italy. Actually, most of the EMI programmes were offered in the north where there was a stronger interest in internationalizing higher education, probably due to the presence of a higher number of private universities and a more diversified student population (Costa and Coleman, 2013). As a matter of fact, it was in a northern institution – namely the ‘Politecnico di Milano’ – that a heated debate on EMI took place, which lasted for approximately 6 years (2012-2018). This case is emblematic for the reception and reaction towards EMI in the Italian national context.

The ‘Politecnico di Milano’ approved a three-year Strategic Plan (2012-2014) which set the objective of internationalization through the introduction of the English-only formula. As a matter of fact, the ‘*Politecnico di Milano*’ had already begun to offer EMI degree programmes at MA level in Engineering since 2004 and was one of the first Italian universities to be interested in providing EMI courses to

²⁰ MIUR: Italian Ministry of Education, University and Research (Ministero dell’Istruzione, dell’Università e della Ricerca), which has been recently divided (2020) into two separate Ministries: the Ministry of Education (MI: Ministero dell’Istruzione) and the Ministry of University and Research (MUR: Ministero dell’Università e Ricerca).

its students. In 2012 Giovanni Azzone, at that time Rector of the ‘**Politecnico di Milano**’, announced the decision to use English as the only language to teach and learn in MA and PhD programmes. This decision would imply the abandonment of the Italian language in most of the degree programmes offered at the ‘Politecnico’, starting from the academic year 2014/2015 (Helm and Dalziel, 2017). This goal to transform all the second-cycle and third-cycle degree courses into English-taught ones was principally driven by the need to pursue the internationalization goal and to comply with the best practices adopted by the European institutions (Molino and Campagna, 2014; Pulcini and Campagna, 2015)

Notwithstanding the Rector’s firm conviction of the favourable effects of this decision, the shift to the English-only formula raised several reactions within the Italian academia which led several professors, scholars, academics and students to sign a petition against it and a legal action was submitted to the Regional Administrative Tribunal (TAR) of the Lombardy region by a group of professors, claiming its annulment. It is no surprise that the case of the ‘Politecnico di Milano’ received a strong echo through the national and international media. At national level, the issue was also examined by the ‘Accademia della Crusca’²¹, the century-old prestigious academy for the promotion of the Italian language and culture. A round table organized in 2012 was an opportunity for several professors, linguists, intellectuals and researchers to make a stand in favour or against this ‘new’ course in higher education. The opinions expressed during the debate have been collected and published in a book edited by Nicoletta Maraschio, at that time the President in charge, and Domenico De Martino (2013). The volume was intended to give an overview of the main ideas, hypothesis and thoughts emerged from the round table and to inspire readers to mature a subjective position on the pros and cons of the adoption of English and the importance of the Italian language in education.

The debate on EMI has also encouraged scholarly research on this relatively new turn in the Italian educational agenda. Molino and Campagna (2014) have identified three main areas of concern about the switch to the English-only formula,

²¹ The “Accademia della Crusca” is a prestigious institution, founded in the 1580s by five Florentine scholars. The main aim of the academy is to investigate, study and promote the Italian language and culture. Its name comes from the usual meetings between the scholars, informally called “cruscate” (bran-meetings).

<https://accademiadellacrusca.it/> Last access: 10/12/2020

which encompass “the implementation process and its outcomes, issues of professional, disciplinary and cultural identity and legislative restrictions” (Molino and Campagna, 2014: 163). In addition, other debated issues regard the violation of the “teaching freedom”²²; the overall level of English proficiency which may undermine the quality of education and result in ‘content loss’ (Jensen et al., 2013); loss of prestige of the Italian language in the world; impoverishment of the technical terminology of Italian; scarce institutional support (Costa and Coleman, 2013; Campagna and Pulcini, 2014; Molino and Campagna, 2014; Pulcini and Campagna, 2015).

By opting for the mandatory use of English and then by forcing the teaching staff to use English as the sole language to teach, the following articles of the Italian Constitution would be violated:

- Article 33, which guarantees freedom of teaching to the staff;
- Article 3, which refers to the principle of equality, in terms of social, cultural and linguistic parameters;
- the Royal Decree of 31 August 1993, which fosters the use of Italian as the official language of national education;
- the university law 240/2010, which guarantees integration of cultures and limitation of any imposition of one culture over another (Pulcini and Campagna 2015:69; Costa, 2021).

In March 2013, the court rejected the decision of the Rector to substitute the Italian language with English in all post-graduate and doctoral courses at the ‘Politecnico di Milano’. Subsequent to the rejection of the Rector’s decision, the ‘Politecnico di Milano’ and the Italian Ministry of Education, University and Research (MIUR) decided to appeal to the Council of State. In 2017 the Constitutional Court proposed the parallel language use of Italian and an L2 in academia, which implies the provision of both the Italian version of the degree programme and the foreign one²³.

²² The “teaching freedom” in Italy was included into the *Decreto legge 297/1994*, which promotes and guarantees to teachers the freedom to teach in the way they wish. Thus, they are given professional autonomy in teaching and research.

https://archivio.pubblica.istruzione.it/comitato_musica_new/normativa/allegati/dlgs160494.pdf

Last access: 26/01/2021

²³ <https://www.cortecostituzionale.it/actionSchedaPronuncia.do?anno=2017&numero=42> Last access: 30/12/2020

In this way, Italian universities could offer English-taught programmes along with their Italian versions, also taking into account the disciplinary sectors objectives and the constitutional principles aforementioned. The decision of the Constitutional Court was confirmed by the Council of State in January 2018²⁴ (Molino and Campagna, 2014; Pulcini and Campagna, 2015; Dearden and Macaro, 2016; Helm and Guarda, 2017; Costa, 2021).

Despite the introduction of new language policies, the effective implementation of EMI programmes in Italy is still controversial mainly because of the history of the Italian language and its symbolism within the country and the internal controversies and differences. It has been perceived as a top-down phenomenon and has resulted in the imposition of the English-only formula for political and institutional reasons and to the detriment of the main stakeholders, who are not always keen on it (Costa and Coleman, 2013). As a matter of fact, the ‘Politecnico di Milano’ debate has created “a new form of ‘moderate’ purism in Italian society” (Pulcini, 2020: 41) which is expressed on the one hand through the constant promotion of the Italian language and culture and on the other hand through the awareness that education is constantly changing and has to adapt to new challenges.

1.5.3 Attitudes to EMI

The implementation of EMI in many countries of the world has varied accordingly to the national needs and policies and has provoked different reactions and responses among the stakeholders involved. A wide range of attitudes and reactions have been found in the literature on EMI in Europe, as also reported in the TAEC²⁵ literature database report (2020), in which five European countries

²⁴ Some articles from the Italian press:

<https://diciamoloinitaliano.wordpress.com/2019/11/18/politecnico-di-milano-la-nuova-sentenza-che-apre-allinglese-nelluniversita/> Last access: 12/01/2021

https://milano.repubblica.it/cronaca/2018/01/30/news/politecnico_corsi_inglese_sentenza-187669479/#:~:text=No%20ai%20corsi%20soli%20in,di%20laurea%20magistrale%20e%20dotto%20rati Last access: 12/01/2021

²⁵ TAEC stands for “Transnational Alignment of English Competences for University Lectures” (TAEC). It is a 28-month project (2017-2020), funded through the Erasmus+ programme, in which five European institutions were partners: University of Copenhagen, Maastricht University,

have been widely analyzed and discussed (Denmark, Italy, Spain, The Netherlands and Croatia).

As already stated before, the countries located in the North of Europe have had a longer tradition of EMI programmes; for instance, in **the Netherlands**, the University of Maastricht is considered the pioneer of EMI (See Section 1.5) where the very first EMI programme in Europe was offered in 1987 (Coleman, 2006; Costa, 2009; Wilkinson, 2013; Campagna and Pulcini, 2014). Due to the use of English-only resources, English started to be used along with Dutch, and led to the provision of a bilingual education in which both English and Dutch were used and learned since the primary level of education and at all levels (Dearden, 2015). Yet, bilingual education proved to be quite demanding and expensive, leading to the abandonment of Dutch and to the exclusive use of English as the medium of instruction (Wilkinson, 2013). As a consequence, more than half of the master's programmes offered in Dutch universities are now offered in English as well as the EMI bachelor's programmes which are on the rise (Gabriëls and Wilkinson, 2020).

The reasons for introducing EMI in the Netherlands are also shared by the other countries and include the need to internationalize HE and to increase the number of international students, academic reputation, collaborations and exchanges with the rest of the world (Wilkinson, 2013). By contrast, some concern has been expressed by scholars and policy-makers about the impoverishment of linguistic diversity and specifically of the Dutch as an academic language; domain loss and reduction of academic quality; negative effects on the Dutch culture (Wilkinson, 2013; Breetvelt, 2018). In 2019, these concerns have led the Minister of Education, Culture and Science (Van Engelshoven) to consider a reduction of international students in the country (starting from December 2019, when the law was approved) and more rigorous rules for the languages used in HE, in order to

Università di Torino, Universidad de Lleida, Faculty of Humanities and Social Sciences in Rijeka. The main objectives of the project were to create a common database and a framework of EMI studies carried out in the partners universities and countries; align a locally-used assessment scale (TOEPAS: Test of Oral English Proficiency for Academic Staff) with the CEFR descriptors; and develop an EMI handbook to use as a self-reference guide for EMI lecturers.

TAEC Corpus Report (2020). TAEC Erasmus+ project (2017-2020). URL: <https://www.dipartimentolingue.unito.it/do/progetti.pl/ShowFile?id=rren;field=allegati:key=yd5tUMxdg3gETEOwly0kMXKSV9oaiu7Mt5Dtq5b6xwAIJYYWKIxtQ;t=8435> Last access: 13/07/2020.

preserve the Dutch language integrity and guarantee quality of education (Gabriëls and Wilkinson, 2020).

In addition, due to the high number of international students and staff, intercultural communication is an essential aspect to consider in Dutch universities, which would include the development of cross-cultural communication competence and multicultural awareness (Airey, 2011; Dimova, 2017). Overall, while EMI is perceived positively by lecturers and students because it provides them with a multicultural and international environment where English is the main protagonist, policy makers and national authorities are more worried about the future status of their mother tongue.

Concern about the status of Icelandic has been reported in **Iceland**, due to the increasing presence of English in both daily life and education. In fact, in the last few years, a significant increase of master's degree and PhD programmes offered in English has been registered (Ingvarsdóttir and Arnbjörnsdóttir, 2013), together with the adoption of academic textbooks (90%) available in English only (Arnbjörnsdóttir, 2009). As a consequence, the increasing use of English on a daily basis has been considered as a major challenge to maintain language diversity, especially in a country considered "among the most language-conscious, i.e., purist, of the Nordic communities" (Thøgersen 2010: 295). In addition, EMI has raised questions about the impoverishment of educational quality due to the students' insufficient academic language skills. The findings of five-year investigation (Ingvarsdóttir and Arnbjörnsdóttir, 2015) show that although Icelanders are exposed to the English language daily and their English proficiency is high, it is argued that most of them have several difficulties when it comes to use English at university level and develop writing and reading skills (Pecorari et al. 2012). Moreover, several students struggle with the use of both English and Icelandic simultaneously, as suggested by the 'Parallel Language Use' policy. Thus, in order to tackle these issues, ad-hoc educational policies should be proposed to safeguard the official language and the compulsory education curricula should be reformulated, taking into account the difficulties encountered when English is used as parallel to Icelandic (Ingvarsdóttir and Arnbjörnsdóttir, 2015).

In other Nordic countries such as Denmark, Sweden and Finland the growth of EMI has been impressive (Wächter and Maiworm, 2014) and driven by the need to internationalize the tertiary level of education, attract more fee-paying students and gain more academic prestige. Despite the growing trend, its introduction has also raised questions and concern on how local languages could be safeguarded, especially in light of the small number of speakers of Danish, Finnish and Norwegian. For instance, in **Norway**, EMI has proceeded at a slower pace compared to the other northern countries and has been mainly introduced for political and economic reasons, starting from the 2000s (Ammon and Mc Connell, 2002; Maiworm and Wächter 2002). To maintain the status of Norwegian, universities have started to offer both mother-tongue programmes and EMI ones, even though the latter are not particularly numerous, especially at bachelor's level (Schwach et al., 2012); together with the provision of EMI programmes, the Norwegian government has also promoted the 'internationalization at home' (See Section 1.3) and encouraged its students to study in foreign countries (Nilsson, 1999; Airey et al., 2017).

Similar issue has been found in **Finland** where EMI has proceeded rapidly since the Bologna Process in 1999. In the country, Finnish and Swedish have both official status and are spoken alongside English by most of the population (Thøgersen, 2010). Although the general high levels of English proficiency (EF English Proficiency Index, 2021), the quality of teaching and learning and the promotion of language and cultural diversity have been questioned as a consequence of the significant increase of EMI programmes (Airey et al., 2017).

Maintaining linguistic diversity and protecting minority languages have been identified as key challenges to tackle also in **Sweden**, even though Swedish is much more used than the other Nordic languages, with almost 8 million native speakers (Airey et al., 2017). In this country, EMI has increased exponentially from the 1990s onwards when the very first programmes were offered, mostly at master's and doctoral levels and in the field of technology and physics (Salö, 2010; Airey et al., 2017). Over time, this has provoked much debate on the effects EMI could have on the national language. For this reason and to cope with the linguistic issues, in 2009 the Swedish Government introduced the 'Language Act' that, together with

the Parallel language use policy' (2007), reinforced the status of Swedish as the official language of the country and confirmed the parallel use of English and Swedish in HE (Bolton and Kuteeva, 2012; Kuteeva, 2019). Overall, EMI is appreciated by students (Bolton and Kuteeva, 2012) whereas lecturers are well aware of both pros and cons of the introduction of EMI programmes and the parallel use of Swedish and English (Pecorari et al., 2012).

Also in **Denmark**, the implementation of EMI dates back to the 1990s and since then it has rapidly grown. As reported by Dimova (2020), in the 2019/2020 academic year approximately one thousand programmes were held in English at the University of Copenhagen, especially in the scientific sector and populated by both local and international students (Dimova, 2020). Despite its spread, the Danish universities have attempted to balance the use of both Danish and English, in compliance with the 'Parallel language use policy' (2007).

EMI has been perceived positively by the Danish lecturers even though some doubts have been expressed about the quality of their lessons, their ability to teach through English and the need for more teaching, language and pedagogical support (Airey, 2011; Airey et al., 2017; Dimova, 2017; Fortanet-Gómez, 2020; TAEC literature database report, 2020). For this reason, the University of Copenhagen has developed the TOEPAS, in order to measure the lecturers' ability to teach through English (See Section 2.4.1) (Klaassen and Bos, 2010; Kling and Stæhr, 2012). As regards the students, research carried out by Larsen and Holmes (2017) showed that while students welcomed EMI very positively, they also expressed the intention to study more languages, other than English and Danish, in order to be more competitive in the job market and work in non-Anglophone countries. In addition, the issue of students' limited English proficiency has been partially tackled through specific entry requirements for students (Dimova, 2017, 2020).

In **Poland**, the introduction of English as a second language in the academic curricula began in 1989, after years of political and social tensions in the country. In fact, EMI began to gain ground in the 2000s and increased rapidly from 2007 to 2014, as reported by Wächter and Maiworm (2014), leading to a growth of international students enrolled in Polish universities. Recently, the

internationalization of academia has become high in the agenda because of the decrease of Polish students' enrollments, due to demographics, and the need to attract more foreign students and increase academic prestige (Ellis, 2020).

Similar reasons to establish EMI have been noted in **Austria** where its introduction in the educational system began after the Bologna Process (1999), mainly at master level. Actually, the major drivers towards the use of English as the means to teach and learn revolve around the need to establish international relations, develop mobility activities, also in the form of virtual exchanges (Helm, 2020), provide the students with better English language skills and future job opportunities abroad (Tatzl, 2011; Dearden and Macaro, 2016). As a consequence, the provision of EMI programmes in the Austrian country raised significantly, especially since 2009 in the field of economics and business (Unterberger, 2012) and has been welcomed positively by both lecturers and students who appreciate EMI for the benefits it can bring to them.

While the implementation of EMI in Austria seems to be driven by the stakeholders themselves and encouraged by the policy-makers and the educational system, in other countries, as for instance in **Italy**, the introduction of EMI programmes has been considered as a top-down decision, imposed from above for political and economic reasons (See Section 1.5.4). In addition, the low levels of English proficiency throughout the Italian country have contributed to the limited proliferation of EMI programmes (Costa and Coleman, 2013; Pulcini and Campagna, 2015; Dearden and Macaro, 2016; Broggin and Costa, 2017; Guarda, 2018; TAEC literature database report, 2020).

In **Germany**, the EMI phenomenon is still at an early stage even though it has grown steadily and without much resistance (Gürtler and Kronewald, 2015). The provision of EMI programmes and the use of English within academia are effective ways to internationalize its universities, to be in line with the other European countries and to maintain its strong economic status; as a consequence, it raised from 65 EMI degree programs offered in 2001 (Maiworm and Wächter 2002) to 632 in 2012 (Brenn-White and van Rest, 2012). A study on the different foreign languages used as the means of instruction in Germany, involving 1,032 lecturers working in several institutions, showed that the foreign language mostly used as a

medium of instruction in Germany is English (98.3%) (Gürtler and Kronewald, 2015). In addition, when the respondents were asked to express their motivations to teach through a foreign language, most of them answered that it was for personal interest (81.6%). The data suggested that in Germany lecturers have the option to teach through the medium of a foreign language or not. The ‘self-selection’ of lecturers is not common in those countries where EMI is a top-down process and where certain institutional policies leave lecturers without any option (Gürtler and Kronewald, 2015: 101).

The implementation of EMI programmes in **Croatia** has been a primary goal since 2001, when the country began to integrate the Bologna process objectives into the Croatian higher education system. Despite the efforts, the Croatian language is still the main language of instruction in the country and the number of EMI programmes is quite low, compared to other European countries. The very first EMI programme at the University of Rijeka, which is one of the four largest institutions in Croatia (University of Zagreb, University of Split, University of Rijeka and the University of Osijek), was offered in Economics in 2011 (Drljača Margić and Vodopija-Krstanović, 2020). So far, the main factors that have impeded its massive implementation include the lack of institutional resources and international students, the inadequate preparation of both students and lectures before its implementation and the overall low English proficiency (Drljača Margić and Vodopija-Krstanović, 2017; Bowles and Murphy, 2020; TAEC literature database report, 2020). In fact, a survey conducted at the university of Rijeka showed that most of the lecturers would teach through the medium of English if there were higher levels of English proficiency and more international students (Drljača Margić and Vodopija-Krstanović, 2015, 2020). All in all, the implementation of EMI in the Croatian context has encountered skepticism and concern, both at local and national level.

France has undergone recent changes to its educational system in order to respond to the call for internationalization, which have included a moderate introduction of EMI programmes at MA level within the country, considered as a top-down decision. The limited provision of EMI programmes is mainly due to political resistance and to the fear to endanger the French language integrity and

identity (Gallix, 2013; Pagèze and Lasagabaster, 2017), as also problematized by the *Académie française*, the official authority which is considered the guardian of the French language. Although some institutional and language policies have been recently modified, especially in the light of the growing European multilingualism, EMI is still identified as a threat to the French integrity. Moreover, Pagèze and Lasagabaster (2017) argue that France has an international environment and is one of the countries with the highest number of international students in the world. For this reason, “offering programmes in EMI is not imperative for attracting international students” (Pagèze and Lasagabaster, 2017: 291). Another major challenge for the development of EMI in France is the low national levels of English proficiency which may prevent French students to attend these degree programmes in their own country (Napoli and Sourisseau, 2013). The limitation of enrolments due to students’ low language competence would violate the principles of equality in French education. Moreover, the lack of homogeneous levels of English proficiency, both in students and lecturers, is perceived as a major cause of limited educational quality (Pagèze and Lasagabaster, 2017).

The issue of students and lecturers’ English proficiency in EMI programmes has been a matter of controversy also in **Turkey** where its implementation has not been widely and positively welcomed. While it is considered as a necessary action to internationalize the Turkish HE system, to attract international students and to support the improvement of students’ language competences, EMI has also raised an ongoing debate about its drawbacks. As a matter of fact, EMI is perceived as a threat to the Turkish language and culture and to the overall academic success. It is argued that studying through the medium of English may be beneficial for language development but detrimental for the subject content learning, especially in light of the general low levels of English proficiency. Lack of proficiency is perceived as the cause of low participation and interaction in class and of lower educational quality (Sahan, 2020). Thus, despite the growth of EMI, the Turkish language is still the mostly used language of instruction in Turkey (Sert, 2008; Kirkgöz, 2009; Selvi, 2014; Arkin and Osam, 2015).

As in many other European countries, several institutions in **Spain** have encountered much resistance on the implementation of EMI degree programmes,

mainly because of English proficiency issues, the enormous linguistic diversity within the country and the necessity to safeguard minority languages and foster multilingualism (Doiz et al. 2011, 2013; Arnó and Mancho-Barés, 2015; Dafouz-Milne and Camacho, 2016). Since in Spain there are 17 autonomous communities and several official languages spoken within the country, some regions have become bilingual and provide bilingual education. It is worth noticing that the university of the Basque country is trilingual. Thus, the issue of maintaining the official status of all the languages has been identified as a major challenge to the effective implementation of EMI programmes. Several scholars argue that the growth of EMI programmes and the massive use of English in the Spanish higher education has clashed with the promotion of multilingualism in academia, promoted by the local language policies and by the European union (Doiz et al. 2011, 2013; Lasagabaster, 2015; European Commission, 2018; TAEC literature database report, 2020).

Overall, EMI is welcomed positively by both lecturers and students, as confirmed by Aguilar (2017) who interviewed six EMI lecturers working in three bilingual Catalan universities. They reported positive attitudes towards EMI and identified several benefits, both for students and themselves, which included the beneficial immersion in an English environment, the opportunity to practice of the language and improve English fluency, the positive challenges of international curriculum development and the opportunity for graduates to access better jobs opportunities. As far as students are concerned, Ament and Pérez Vidal (2015) confirmed that Spanish students are willing to enroll in EMI programmes because they want to develop specific skills to live and work in an international context. A more recent study (2020) involving Italian and Spanish students shows that the Spanish respondents (145) are glad to attend EMI programmes and would like to have more language support from a language expert; in their view, language and content instructions should be kept separate and taught by different lecturers (Doiz et al., 2019). Lasagabaster (2021) confirms that a close collaboration between content and language lecturers would be beneficial to the students' learning pathway and the quality of teaching.

As in most of the European countries, EMI in **Asia** has been mainly driven by institutional, economic and political reasons. Though, those drivers together with the institutional policies have often clashed with the students and lecturers' competences and needs. For instance, language proficiency has been identified as one of the major obstacles to successful EMI programmes in Asian countries. While attending EMI courses is seen as a powerful and natural way to improve students' language proficiency (Lei and Hu, 2014; Dearden, 2018; Galloway and Ruegg, 2020; Rose et al., 2020), it is also perceived as demanding and challenging by both students and lecturers. Indeed, in Korea (Kang and Park, 2005; Cho, 2012) and Pakistan (Khan, 2013) but also in the Middle East, in Qatar (Ellili-Cherif and Alkhateeb, 2015), the low levels of students' English proficiency have prevented them to fully appreciate the EMI experience and develop positive attitudes towards it. In China and Japan, even lecturers with high English proficiency levels find EMI teaching more difficult and time-consuming than through their L1 (Galloway et al., 2017) and think that the use of both their mother tongue and the L2 in class (that in this case is English) may be beneficial for teaching and learning (Adamson and Coulson, 2015; Aizawa and Rose, 2019). In fact, code-switching is quite used in EMI classes in China, especially in those contexts where there are no international students (Peng, 2007; Hu et al., 2014) and most of the lecturers are Chinese-native speakers.

Research conducted by Hu, Li and Lei (2014) showed positive attitudes among Chinese lecturers towards EMI, which is perceived as a way to boost mobility and job opportunities for their students. Similar findings were found in Pakistan (Khan, 2013), Bangladesh (Hamid et al., 2013) and Japan (Chapple, 2015) where EMI is seen as a gateway to the rest of world and improved English proficiency. Other motivating factors to opt for an English-mediated education in the Arab countries are the need to study in the language mostly used in publications and resources, that is English and to obtain more job opportunities once graduated (Belhiah and Elhami, 2014).

In all the countries discussed, EMI is often perceived as a positive and necessary change towards a more international and innovative education. Most of the stakeholders involved are conscious of the benefits of EMI, which include

international visibility, academic prestige, higher number of enrolled students, more job opportunities and sometimes improved English proficiency. Nonetheless, questions and doubts have been raised especially about possible domain loss, threat for national and minority languages, necessity of intercultural competences, teaching skills and language support and last but not least the issue of low English proficiency, both for students and lecturers. As a result, the universities interested in EMI have tried to reformulate their strategic plans and language policies which have become crucial for guaranteeing high quality standard and safeguarding the numerous and precious national languages spoken all over the world.

1.5.4 The spread of EMI in Italy

The internationalization of higher education in Italy, together with the implementation of EMI programmes, reflects the situation of most of the Mediterranean countries where the development of an English-mediated education has proceeded more slowly compared to the rest of Europe. Costa and Coleman (2013) maintain that although “the context of Italian higher education is distinctive, in some senses it is also representative of Southern Europe” (Costa and Coleman, 2013: 4).

As far as Italy is concerned, after the Bologna process in 1999, the Italian institutions have strived to internationalize the higher education system, despite the strong resistance of some scholars, professors and policy-makers (Maraschio and De Martino, 2013) and historical, sociocultural and linguistic issues (Costa and Coleman, 2013; Pulcini, 2020).

As regards the language, Italy has a long tradition of ‘internal’ fragmentation and multilingualism, which has led to the co-existence of several geographical varieties (dialects) of the Italian language within the country. These linguistic differences underline the richness of the Italian language and its historical value for the country. Besides, the late unification of the country in 1861 has made the Italian language a symbol of national identity and union which has left little space to other languages and has made the integration of English within academia extremely challenging (Pulcini and Campagna, 2015). As a consequence, English

is not generally spoken in the everyday life and “(..) is still quite far from being the language of higher education in Italy” (Helm and Guarda; 2015: 5) which is undoubtedly Italian (Costa, 2021).

The initial interest towards EMI in Italy begun in the 1990s and has risen steadily in the following years, especially after the Bologna process, although its implementation has followed different paths within the country and “it is only in its early stages” (Campagna and Pulcini, 2014:182). The very first EMI course in Italy was offered in 1997 by a public university located in the north of the country, whereas in the centre of Italy EMI appeared for the first time in 2004 and in the south in 2005 (Broggini and Costa, 2017), mainly in certain disciplinary sectors, such as Economics, Engineering, Biotechnology and Law (Costa, 2009). The findings of a survey of 80 Italian institutions, conducted by the Conference of Italian University Rectors in 2012 (CRUI report, 2012), confirmed that in Italy the provision of EMI was not balanced within the territory. During the academic year 2011/2012 the universities located in the north of Italy offered more EMI programmes compared to the centre and south of the country, especially in certain areas, such as Milan (128 programmes), Turin (62 programmes) and Bologna (56 programmes). Moreover, 34% of the EMI programmes were at doctoral level, followed by MA (25%) and BA (3%), mainly in Economics and Engineering.

A survey of 38 Italian universities, carried out by Costa and Coleman (2013), showed that most of the ETPs in Italy were in Economics and Engineering and offered by Northern institutions. The findings confirmed the data obtained by the CRUI’s survey (2012) but reported a growth of MA programmes compared to doctoral ones (Costa and Coleman, 2013). Nevertheless, Wächter and Maiworm (2014) reported that at the time of the study, just 0,5% of Italian students had enrolled in EMI programmes (Wächter and Maiworm, 2014).

In 2017, Brogginini and Costa carried out a survey which involved 40 Italian universities during the academic year 2014/2015. A significant increase (85%) of EMI programmes was registered in 2015 compared to 2012, in both public and private institutions, mainly in Engineering and Economics. The vast majority of the programmes offered were at MA level (Broggini and Costa, 2017; Campagna and Pulcini, 2014; Costa and Coleman, 2013; Guarda and Helm, 2017; Helm and

Guarda, 2015). The trends have been confirmed by a survey conducted by CRUI in 2018, which showed that most of the EMI degree programmes in Italy were at Master level and in certain disciplinary sectors such as Economics (41 programmes), Engineering (41 programmes), Medicine and Surgery (10 programmes) and Information Technology (9 programmes) (CRUI report, 2019). These data were corroborated by a recent study carried out during the academic year 2019/2020, in which it is argued that 91% of the overall EMI courses throughout the Italian territory refers to MA programmes, compared to BA (9%) (Cicillini, 2021).

Overall, a significant rise of EMI programmes has been registered in the last few years, as confirmed in a recent report published by the CRUI in 2019, which shows a 178% increase of EMI courses during the academic year 2018/2019, compared to 2013/2014, still in Economics and Engineering.

So far, EMI in Italy has increased steadily and has been welcomed positively by the main stakeholders who have identified benefits but also challenges of its implementation within the country. While EMI is perceived as a way to attract more students, especially international ones, increase the institutional income, improve the national prestige within the global academic environment and the overall national proficiency in English, the massive use of English has also raised some questions and concern. The main concerns revolve around the insufficient command of English, both in students and lecturers; the lack of effective collaboration between content and language lecturers (Costa, 2021); the presence of few international students, which represent 4,96% of the enrolled students throughout the country (CRUI report, 2019); the negative impact that English may have on the status of the Italian language; possible domain loss and lack of interest towards the study of the Italian language and history (Costa and Coleman, 2013; Broggin and Costa, 2017; Guarda, 2018; TAEC literature database report, 2020).

The low levels of English proficiency are a key challenge in the Italian educational system, as confirmed by a recent *EF English Proficiency Index* report published in 2021. Actually, when looking at the European countries, Italy and Spain are in the very last positions of the English proficiency rank and so far, have not showed any significant improvement, compared to the previous editions (EF

English Proficiency Index, 2021). These data confirm the existence of ‘two Europes’, as theorized by Campagna and Pulcini (2014), who have underlined significant differences in English proficiency between north and south of Europe.

While one of the reasons to switch to the English-only formula is to improve English language proficiency, a major challenge is the students and lecturers’ insufficient level of English, as showed in several studies conducted at national level (Costa and Coleman, 2013; Pulcini and Campagna, 2015; Brogгинi and Costa, 2017). The findings of a survey to 111 students, carried out by Ackerley (2017) showed that one of the greatest motivations to enroll in EMI programmes is to improve their English skills, especially the specialized terminology and the comprehension. This finds some correlation with Guarda’s (2018) research in which 190 students took part; the respondents expressed their concern about their language skills, considered as a determining factor in the overall comprehension. Broggini and Costa (2017) confirmed that both students and lecturers’ low English proficiency is considered as a major difficulty to the success of EMI in Italian institutions. The data confirm the findings of another study on 160 graduate students, conducted by Costa and Mariotti (2017), in which Italian students argue that as long as lecturers have a good command of English, EMI can affect their English proficiency positively. Research carried out by Cicillini and Giacosa (2020c) about the transition from in-person to online classes during the COVID-19 pandemic, involving 100 students enrolled in some medical and nursing schools in Italy and 49 lecturers, showed that the general low levels of English proficiency affected interaction and communication in class. Students argued to feel unease to speak and interact in English in face-to-face classes due to their lack of confidence in their L2 and to their classmates’ low English competences; this was exacerbated by the sudden shift to the online modality which made the EMI education more challenging because of technical problems, lack of digital expertise and feelings of isolation and anxiety.

In conclusion, the students and lecturers’ low proficiency has posed significant challenges to the quality of education in English and to the acceptance of EMI, even though attitudes towards it are generally positive. Thus, it is imperative that the Italian institutions should reformulate their educational policies,

ensure language and teaching support and raise awareness of the role that English proficiency may have for the achievement of high-quality education.

The main objective of this first chapter was to define the theoretical framework upon which this research is based and to provide an overview of the state-of-the-art of EMI, starting from the adoption of English in the former-British colonies to its global spread as the lingua franca of global communication and more recently as a medium of instruction. Its expansion has been mainly due to historical, political and economic reasons and has been perceived on the one hand as a powerful tool for international communication but on the other hand as a threat to multilingualism and linguistic diversity. This has become an issue of even more concern after its increasing use in education, in those countries where English is usually used as a second or foreign language. Its adoption within many universities all over the world has been mainly driven by the call for internationalizing HE, the need to gain academic prestige and reach top positions in global universities rankings and attract more international students and scholars. This had led to the adoption of an English-mediated education at the expense of the national languages and their linguistic integrity and has raised concern about possible domain loss, low educational quality and a new form of linguistic imperialism (Phillipson, 1992). Although the efforts made by the countries and institutions involved in EMI to respect the stakeholders' needs, EMI is far from being a homogenous phenomenon and needs local and ad-hoc strategies to meet the general objectives and expectations. Moreover, because of its novelty EMI is “an evolutionary concept” (Macaro, 2018:297) that needs empirical research to establish the extent to which EMI can be beneficial to students, not only for a presumed English language improvement but also for the quality of academic education.

Chapter 2. The language factor in EMI

2.1 Introduction

This chapter delves into the role played by English in the EMI context and investigates the extent to which some theories about second language acquisition (SLA) can be applied to EMI classrooms. Starting from the assumption that students are exposed to constant language input, there is some evidence to believe that they may develop their English proficiency, either in the form of incidental learning (second language acquisition), unconsciously and without formal instruction, or in the form of intentional learning (second language learning), through direct action of both students and lecturers (Krashen, 1981). However, the latter seems to be less common in the EMI context because of the rationale behind it that does not include any direct language instruction nor attention to the language used, but to content delivery only.

Considering the exposure to the English language and the students' intention to develop their skills, relevant studies about language gains and outcomes are presented in this chapter and discussed as regards to both receptive and productive skills. The former usually refers to passive skills (listening and reading), whereas the latter to active skills (speaking and writing) (Laufer and Goldstein, 2004). Although EMI scholars have reported some language gains in specific areas (Taguchi, 2011; Rogier, 2012; Aguilar and Muñoz, 2014; Ritcher, 2017; Roquet and Pérez-Vidal, 2017; Ament et al., 2018), this is not the rule, especially because of the general inadequate levels of English proficiency of both students and lecturers and the lack of language objectives in the syllabi. To cope with these issues, admission policies and specific language entry requirements have been set by institutions to enter EMI degree programmes, whose verification usually relies on the CEFR levels. As a consequence, the six CEFR levels and their main characteristics are discussed together with the most common English entry requirements requested to prospective candidates to access degree programmes in different EMI settings.

2.2 EMI as a possible context for second language acquisition (SLA)

The English language plays a key role in the EMI environment because, as also expressed in two much-quoted definitions of EMI (Macaro, 2018; Pecorari and Malmström, 2018), it is the most common medium used to communicate, teach and learn specialized content among people with different mother tongues and language backgrounds. Due to its constant use, improving one's competence in the English language has been identified among the major reasons to opt for English-mediated education by students who speak it as an additional or foreign language. However, in EMI classes the focus is on the subject matter and not deliberately on the language, which is merely used as a common tool to enable interaction and exchange. Hellekjaer (2010:11) asserts that “English-medium instruction is when non-language courses, for instance, medicine, physics, or political science are taught in English (..) by a lecturer who does not have English as his/her first language (L1)”. Thus, EMI classes are usually delivered by non-native English speakers who are experts in their academic subject but are not language experts and as a consequence are often reluctant to take full responsibility for the students' language learning and development (Costa, 2013; Lasagabaster, 2018; Dafouz-Milne, 2020).

Although no explicit reference to possible language improvement and language learning outcomes is included in most of the definitions of EMI, it is evident that learners study in an environment where plenty of language input is naturally provided. Indeed, attending lectures, taking notes, interacting with classmates and teachers, reading learning material and sitting exams are activities in which a certain amount of language is used and consequently students may intentionally or unintentionally acquire and learn English while they are concentrated on their discipline. Rose et al. (2020: 2150) suggest that a certain degree of language learning may occur while students are focused on the subject content and that “a (..) benefit of EMI is that it kills two birds with one stone; (..) students simultaneously learn both English and content knowledge”. Aguilar (2017) raises a similar point by arguing that: “EMI implies that content—which is given in English—is the priority. Some incidental language learning is expected due to

the exposure but without any specific language learning goals. English (language) learning is not assessed” (Aguilar, 2017:726). Indeed, in the EMI learning context, language assessment and outcomes are not explicitly mentioned in the curricula nor are language development and improvement formalized as such, even though they are generally expected (Tatzl, 2011; Lei and Hu, 2014; Dearden, 2018). Therefore, EMI courses are often introduced by the institutions primarily because they can attract a more diversified student population and teaching staff, facilitate international communication, increase academic prestige and because language improvement is expected (Ali, 2013; Costa and Coleman, 2013; Pecorari, 2020).

In the literature on EMI, there are relatively few studies exploring English improvement and language outcomes, and little empirical research has investigated the role played by English in the EMI students’ learning experience. Because of the extensive exposure to English, there is some evidence that EMI may be regarded as a tool for learning the language; it has some similarities with those contexts where a second language is learned, mainly because students are immersed in an English-mediated environment and are exposed to a certain degree of comprehensible input delivered by the lecturer (Rogier, 2012; Costa, 2012, 2016; Macaro, 2018). This view of EMI is influenced by research carried out on **second language acquisition (SLA)**, which has shown that the process of acquiring a new language normally takes place in a natural, unconscious and uncontrolled way, especially when the learner is focused on understanding and communicating, and it is similar to the process of acquiring the first language. Given a good deal of meaningful input, the motivated learners “(...) can not only increase their second language proficiency in informal environments but may do as well as or better than learners who have spent a comparable amount of time in formal situations” (Krashen, 1981: 40).

According to the Krashen’s Monitor Model of language acquisition and the **“Input Hypothesis”** (1982; 1985; 1995), the input refers to all the utterances, data and resources provided by the lecturers, fully or partially understood by the learners, that they would not (probably) be able to use autonomously. To acquire the language effectively, the input (i) should be more difficult (i + 1) than the linguistic structures already known by the learners. Therefore, according to Krashen, the comprehensible input provided by content lecturers in class is essential

for acquiring a second language because by simply uttering words lecturers expose their students to both the content explicitly taught and the language used as the instructional means. This scholar claimed that, given a certain amount of input, appropriately pitched by the lecturers, learners would understand the general meaning of the lesson and learn the language unconsciously. In his view, in a qualitative learning environment and while the learners' attention is principally focused on the main topic of the lesson, some incidental language learning may take place. Although this type of language learning is driven by an unconscious process and occurs without formal instruction, this does not mean that students do not learn effectively; on the contrary, the SLA literature confirms that **incidental learning** may be an effective and alternative way of learning a second language, as long as a certain amount of significant input is given to the learners (Krashen 1985; Snow 1985; Wode 1999). As a consequence, the quality of the input provided may be influenced by the role models – the lecturers – who, in the EMI contexts, often have relatively limited English proficiency (Coleman, 2006; Costa and Coleman, 2013; Pulcini, 2015; Drljača Margić and Vodopija-Krstanović, 2017; Macaro et al., 2018).

The Krashen's Input Hypothesis is one of the most popular and influential theory of SLA, even though some of its features have been criticized by scholars who argue that the acquisition of a second language requires learners to explicitly focus on the target language. Under this view, rooted in behavioural theories (Skinner, 1957), direct instruction, rule-governed behaviour and practice are considered as necessary elements to language learning. Despite criticism, the assumption that some forms of incidental learning may take place while learners are focused on the subject matter is still valid and shared among scholars who think that some features of the target language may be acquired incidentally (Ellis, 2003). As Krashen (1981) states, "formal and informal environments contribute to second language competence in different ways, or rather, to different aspects of second language competence" (Krashen, 1981: 47). It can therefore be assumed that in an EMI class, students may unconsciously learn some features of the language, even though conscious and effective study, together with a focus on form, are advisable to master the target language.

When acquiring a second language, additional factors are also thought to be necessary, as for instance the effective input received, called “intake”; indeed, not all the input received is acquired because the learners may or may not have the competence and tools to manage new information. Then, the intake becomes part of the learner’s linguistic system, named “interlanguage”, that represents the target language structures known by the learner (Selinker, 1972). The students’ competence usually depends on an interlanguage continuum between their first and second language; it is an intermediate level between the L1 and the target language which encompasses a set of rules created by the learner during the acquisition process.

Another key factor for acquiring the language is the output, referred to in the SLA literature as the “**Output Hypothesis**” (Swain, 1985; 1995), based on the assumption that it is through the practice of the language that language acquisition and learning take place. By producing some utterances and writing, learners test their skills and realize what they actually know, and which linguistic structures need more attention. Under this view, the output hypothesis places emphasis on the learner’s independence to use the language and represents a shift from the idea that learners would passively acquire it without any formal instruction and just through the input delivered by the teachers. In the EMI context, this would imply that students actively participated in class, by interacting with peers and lecturers, asking questions and communicating. That would be an ideal environment for plenty of linguistic input and output, even though some scholars argue that especially at university level, classes are usually overcrowded, and consequently spontaneous speech and interaction is scarce (Ritcher, 2017; Macaro, 2018).

In addition to the input and output theories, the SLA literature has confirmed the key role played by the **interaction** and the **negotiation of meaning** in the process of language acquisition and learning (Long, 1981, 1996). Indeed, when learners speak and produce language in a conversation, the interaction between speakers and the use of negotiation techniques may be helpful to overcome linguistic barriers and solve communication issues. By asking for clarifications or repetitions, checking understanding and negotiating the meaning, learners can modify the conversation and understand the main points raised. Some scholars

argue that through these techniques, language learning may take place especially as regards vocabulary (Ellis, Tanaka and Yamazaki, 1994) and morphosyntax (Mackey, 1999). Then, taking the risk to speak up in an EMI class and interact with professors and classmates may lead to a certain degree of linguistic gains, as long as the environment (e.g., monologic or dialogic discourse; students population; class size) allows students to do so.

SLA research also suggests the importance of teachers feedback in the learners' language experience, when they attempt to use the linguistic repertoire already acquired. Long's research (1981, 1996) about interaction and negotiation of meaning was later developed and expanded in order to include the teachers' feedback and a **"Focus on Form" (FoF)** (Long and Robinson, 1998; Costa, 2012; Nassaji, 2016). The expression refers to a context where the language is treated not just as a tool to communicate but also as an object, and consequently attention is also paid to the characteristics of the language, from phonology to grammar and lexis (Pérez-Vidal, 2007). Macaro (2018) argues that the focus on form is usually concentrated on the lexical forms of the language such as the "semantic or surface features of words, collocations (..)" rather than on grammar (Macaro 2018: 225). Under this view, students' errors may become an opportunity for teachers to provide some feedback and clarifications and to spend some time for language instruction. As Ellis, Basturkmen and Loewen (2001) argue "attention to the meanings of specific lexical forms in the context of meaning-focused activity constitutes focus on form" (Ellis, Basturkmen and Loewen, 2001: 415, 416). For instance, in an EMI class, where the focus is on the discipline and a considerable number of technical words are used, the explanation of the vocabulary, together with the provision of glossaries (Macaro, 2020), may be helpful to understand the meaning conveyed and can be considered a FoF activity (Nation, 2001; Costa, 2012). Nonetheless, by definition EMI does not include any language focus, explicit teaching or FoF activities, which are proper to other educational approaches, such as CLIL and ICLHE (See Section 1.4.1).

Despite the rich theoretical background on SLA and EMI, little is known about the effects that English-mediated education can have on students' English proficiency. Nonetheless, there is some evidence to advocate for possible language

improvement because some features of second language acquisition theories seem to be similar to those occurring in EMI classes: students are provided with a certain amount of information and subject-content in English (input); the extensive exposure to English may lead to unconscious language development and improvement (incidental learning); in addition, learners have the opportunity to use the language, interact and ask questions (output, interaction and negotiation of the meaning) in authentic settings, considered as effective ways of stimulating the learning process (García Mayo and Lázaro Ibarrola, 2015). In these situations, learners may also receive some comments or feedback from the lecturers even though correction is relatively limited because of the very nature of EMI classes and the fact that lecturers do not consider themselves as English instructors but as experts in their field of study (Costa 2012; Lasagabaster, 2018). As a consequence, lecturers' attention to the language in EMI classes is generally quite low.

Under these circumstances and according to SLA studies, the high exposure to English can be an effective opportunity for practicing the language and it is believed to promote English improvement in a natural and real environment (Dalton-Puffer, 2011; Dupuy, 2000). The acquisition and learning of a foreign/second language seem to vary significantly as a result of the amount and quality of the aforementioned factors; in fact, the absence of formal language instruction and individual language study in the EMI context makes it difficult to confirm whether any language-learning outcome is actually achieved and if students' English proficiency improves (Sert, 2008; Tatzl, 2011).

2.3 English language outcomes in EMI classes

Developing one's competence in the English language has been reported as a major motivating factor for students to prefer English-mediated education instead of mother-tongue one. Yet, dealing with the language is not part of the EMI syllabi mainly because it is not a primary and explicit intended outcome and English functions as a common means to guarantee communication and exchange. As Pecorari (2020) confirms: "in EMI, (...) language learning objectives are casual if

they are articulated at all” (Pecorari, 2020:22), because the main goal of such classes is to achieve content-related outcomes through the medium of English (Airey, 2016). As a consequence, English language improvement in EMI contexts is “much more subdued” (Pecorari, 2020:22) and needs much empirical research.

While much of the literature on EMI reports the benefits and challenges perceived by EMI students as regards the language, few studies have dealt with the effective language outcomes achieved in such educational context. According to Molino et al. (2022), several factors may have influenced research on language gains. Among these, they quote the limited participation and collaboration of the EMI stakeholders in research projects, which was probably due to the top-down implementation of EMI in several institutions, the lecturers’ low involvement in the planning of the activities and the fear to lose face and credibility. Another reason may be related to the difficulty of obtaining confidential data about the students’ outcomes and of keeping track of their language development. Instead, much research has been conducted on international students in Anglophone contexts, where they are offered “immersion education²⁶” and “content-based instruction²⁷”, and in the CLIL context, where both content and language outcomes are expected.

As far as the EMI environment and **language gains** are concerned, the study carried out by Ritcher (2017) in Vienna reported positive effects of EMI on the learners’ *speaking skills*, specifically their pronunciation. The results from both the focus and control groups showed an improvement in the students’ phonological competence which has been attributed to the meaningful input provided by English native lecturers and the students’ motivation to improve their English proficiency. Positive linguistic gains were also reported in a study conducted by Ament et al., (2018), which observed two groups of students, full-EMI (425 contact hours per

²⁶ *Immersion education* has been defined by Lyster (2007) as a form of bilingual education that aims at additive bilingualism by providing students with a sheltered classroom environment in which they receive at least half of their subject-matter instruction through the medium of a language that they are learning as a second, foreign, heritage, or indigenous language. In addition, they receive some instruction through the medium of a shared primary language, which normally has majority status in the community” (2007:8). An example of this type of education is the French immersion in Canada, where anglophone children are taught school subjects in another language (French), that has also official and national status.

²⁷ The expression *content-based instruction*, emerged in the United States in the 1970s, refers to: “the concurrent teaching of academic subject matter and second language skills” (Brinton, Snow and Wesche, 2003:2), very popular in ESL contexts where immigrants still have to learn the official language.

academic year) and semi-EMI ones (35 contact hours per academic year). The study, which dealt with the students' *speaking skills* and the acquisition and use of pragmatic markers in oral communication, showed that full-EMI students improved their output skills by producing a wider variety of pragmatic markers compared to semi-EMI students, as a consequence of the exposure to English language input. This may be attributed to an increased confidence in the use of the target language structures, as also shown in other studies (Tsui, 2004; Wannagat, 2007). Improved *speaking skills* were also found in a group of EMI students in Japan. Taguchi's (2011) study on pragmatic competence revealed that EMI learners improved their oral abilities in informal contexts but less in formal situations. As regards *writing skills*, a research study carried out by Tai (2015) in Taiwan suggested that after one semester the sampled EMI students perceived their production skills improved, especially in accuracy and fluency.

Rogier (2012) observed the students' language gains after four years of EMI education in the UAE; the longitudinal study revealed that most of the gains occurred primarily in the *speaking area (productive skill)*, and then in *reading, writing and listening*. Significant improvements in students' *listening skills* were also reported in a research study carried out by Aguilar and Muñoz (2014) in Spain. This research, which involved 63 students, showed that the highest listening gains were reached by the students with lower English proficiency levels at the beginning of the term. As a consequence, the input received was beneficial at least to lower English students, leading the researchers to assume that English-mediated education may be more profitable for less proficient learners.

Some studies investigated the students' **self-perceptions** about their language improvement and gains in EMI contexts. Maiz-Arevalo and Dominguez-Romero (2013) argued that more than half of the participants in their study thought that both their *speaking* and *listening skills* had improved significantly. Similar findings were found in Aguilar and Rodríguez's research (2012), in which EMI students stated that they improved their *speaking* and *listening* abilities together with their knowledge of specialized vocabulary. Other research reported a certain degree of English improvement in *receptive* (Muñoz, 2001; Aguilar and Rodríguez, 2012; Belhiah and Elhami, 2015; Yang, 2015; Roquet et al., 2020) and *productive*

skills (Belhiah and Elhami, 2015; Yang, 2015), especially in *the oral abilities* (Aguilar and Rodríguez, 2012; Clark, 2017; Tatzl, 2011). Other studies highlighted the improvement of the *specialized terminology* (Ackerley 2017; Aguilar and Rodríguez, 2012; Bartik et al., 2012; Arnó-Macià and Mancho-Barés 2015) while lecturers teach the subject content. Instead, Larsen and Holmes (2017) reported the findings of some wide-scale surveys on students carried out at the University of Copenhagen and argued that, even though Danish students have high levels of English proficiency, some of them (30%) would need higher levels of academic English competence and better written academic skills to meet the demands of higher education.

Research conducted by Lei and Hu (2014) in China, which compared two groups of students enrolled in an English-mediated programme and a Chinese-mediated one, revealed that the EMI students complained about the lack of language improvements and were disappointed about the quality of content teaching. Moreover, no statistically significant difference between the two groups was registered as regards any form of English improvement. Similarly, a research study carried out by Ament and Pérez-Vidal (2015), focused on two undergraduate student groups, showed similar scores in the tests undertaken by both EMI and semi-EMI students (listening, writing and lexico-grammar tasks were included) which meant that no significant differences were found between the two. The findings showed that while a certain degree of language improvement was registered in productive skills (grammar, vocabulary and writing), no listening gains (receptive skill) were reported both in EMI and semi-EMI students. The findings suggest that linguistic gains in EMI classes seem to be casual and subject to the context, the stakeholders and the input provided.

Overall, the literature reviewed in this section has revealed that in the EMI context speaking is the most improved ability among the students, followed by receptive skills, mainly because of the high exposure to the language input and the need to communicate, interact, ask questions and for clarifications, features that are common to most of the learning environments. As a consequence, in the EMI context, although no explicit language instruction generally takes place, there seems to be chances of English improvement, which may depend on the quality of the

language input, the lecturers' teaching styles and the students' motivations and attitudes.

In **CLIL** classes, where both subject-matter and language are explicitly taught, school pupils seem to make good language progress, especially when compared to the students receiving more traditional education (Ruiz de Zarobe and Jiménez Catalàn, 2009; Coyle et al., 2010; Pérez-Vidal, 2011). Studies on CLIL have revealed that improvements are mostly made in the *vocabulary* area, which is the linguistic aspect mostly taught in such context (Matiasek, 2005), specifically technical vocabulary, semi-technical terminology, and academic language (Matiasek, 2005; Dalton-Puffer, 2008). High linguistic gains in vocabulary have also been found in some research comparing EFL and CLIL students, in which the latter usually outperformed their counterparts (Goris, Denessen and Verhoeven, 2013; Sylvén and Ohlander, 2014; Gierlinger and Wagner, 2016). Instead, general English and informal registers do not reach the same levels of improvement (Dalton-Puffer, 2008), probably because both lecturers and students are more concentrated on the discipline and its specific lexicon.

In this context, the exposure to the language and the direct language teaching are beneficial to CLIL students who are likely to boost their confidence and improve their *receptive* and *speaking skills*, especially their fluency, speech length, risk-taking and creativity (Mewald, 2004; Rieder and Hüttener, 2007; Dalton-Puffer, 2008). By contrast, even though very few studies have focused on the students' *writing skills*, no linguistic gains have been registered in writing tasks performance (Llinares and Whittaker, 2006; Vollmer et al., 2006). Another area where no linguistic outcomes have been found is *pronunciation* (Ruiz de Zarobe, 2010), probably because of the high presence of lecturers who are neither English native speakers nor English language specialists. Yet, when comparing CLIL and non-CLIL students, CLIL learners usually achieve better results (Jexenflicker and Dalton-Puffer, 2010; Ruiz de Zarobe, 2010).

All in all, language learning outcomes are not usually incorporated in the academic curricula and seem to be casual and unconscious, favored by a certain degree of incidental learning and driven by the input provided and the learning environment. Nonetheless, there is evidence to confirm that several institutions

offer EMI programmes to improve their students' language skills and that students themselves wish to develop their English skills and believe that attending EMI courses may be beneficial for their English proficiency improvement. In fact, some studies have reported language gains especially in the areas of specialized vocabulary, speaking, listening, and reading, with the exception of writing which is not regularly practiced in EMI classes. Similar findings have been shown in studies investigating CLIL classes, where both language and content are explicit outcomes. In fact, while gains are reported in both receptive and productive skills, writing remains less involved and little explored.

2.4 English proficiency and language entry requirements

This section stresses how important English proficiency and language entry requirements are in EMI classes. It reports on the main challenges emerged when students and lecturers have limited English skills and presents the most common admission policies set to enroll in EMI degree programmes.

2.4.1 Issues due to low English proficiency

The implementation of EMI programmes throughout non-English speaking countries has been perceived differently by the people involved, as a result of its various features and implications. While, on the one hand, it has been identified as an opportunity for creating and strengthening international relations, welcoming foreign students and scholars and gaining much academic prestige, on the other hand, it has been viewed as a possible threat to the quality of education and the students' academic success.

This is what has emerged from several reflections on the cost-benefits of EMI, which underlined the general low levels of English proficiency as one of the major challenges and cause of dissatisfaction and loss of quality standards (Coleman, 2006; Drljača Margić and Žeželić, 2015; Ingvarsdóttir and Arnbjörnsdóttir, 2015; Pagèze and Lasagabaster, 2017; Gabriëls and Wilkinson,

2020). This regards most of the stakeholders involved in EMI, from students to lecturers and administrative staff (Coleman, 2006; Dafouz-Milne, 2007; Costa and Coleman, 2013; Pulcini, 2015; Drljača Margić and Vodopija-Krstanović, 2017; Macaro et al., 2018; Clark and Guarda, 2018).

Based on the findings from several countries where EMI has been proposed, the students' low proficiency may lead to limited subject learning, lower interaction and academic gains and success, feelings of inadequacy, dissatisfaction and higher drop-out rates (Coleman, 2006; Marsh, 2006; Doiz et al., 2012). This mirrors the general picture of several countries in the world where the citizens' English competence is low, as for instance in the South of Europe (Wächter and Maiworm, 2014; Education First, 2019) and in many areas of China and Japan (Hu, 2009; 2019; Lei and Hu, 2014; Galloway et al., 2017; Aizawa et al., 2020). Actually, especially in low English proficient countries, EMI is often perceived as an opportunity to improve the students' language skills.

Some studies have stressed how limited language competence can often be a barrier for *content* understanding and learning. Evans and Green (2007) identified the low knowledge of technical vocabulary as a major cause for students' poor academic performance and misunderstandings. Similar findings were reported in Chang's study (2010) in Taiwan where EMI students experienced several difficulties in learning the subject content because of inadequate vocabulary knowledge. Another research investigating the students' experience in EMI classes in Turkey (Kamaşak, Sahan and Rose, 2020) revealed that vocabulary, speaking and academic writing tasks were considered as the most challenging activities in EMI classes. Indeed, previous studies had already reported similar challenges as regards productive skills in EMI (Kırkgöz, 2005; Sert, 2008; Hellekjær, 2010; Evans and Morrison, 2011; Kamaşak et al., 2020).

In Taiwan, EMI students experienced some difficulties in understanding the content delivered through English, not only because of their low proficiency but also of external factors, such as the students' motivation and interest in the learning process and the lecturers' assessing methods (Yang, 2015). Vinke's research (1995) on 50 experimental students and 50 controls, enrolled respectively in an English-mediated programme and a mother-tongue one, showed that the language of

instruction influenced the students' content learning. In fact, non-EMI students (studying in Dutch) performed better in a subject-matter test, confirming the assumption that the use of English as the medium of instruction may negatively affect the students' learning process and success. Similar findings were reported in Hellekjaer's research (2010) on Swedish and German students enrolled in EMI programmes in Sweden, which showed that language issues contributed to the students' negative academic experience and poor content outcomes. Also in a CLIL context in Tanzania (Brock-Utne, 2007), the students learning process was significantly slowed down, as a consequence of the low English proficiency and the pressure felt when it came to speaking up and interacting in English. Drljača Margić and Žeželić (2015) argued that the majority of Croatian students at the University of Rijeka voiced concerns about the quality of EMI education, due to their inadequate command of English; if they had to choose between Croatian and English medium programmes, they would definitely opt for the Croatian ones.

Generally speaking, poor language skills and low English proficiency levels inevitably affect the quality of education and the students' learning process, as also found in previous research focused on the students' major challenges in EMI (Airey and Linder, 2006; Hellekjær, 2010; Evans and Morrison, 2011; Kim, Tatar and Choi, 2014). In fact, it has emerged that some EMI students decide to abandon their studies due to their insufficient language skills and poor academic outcomes. For instance, Chapple (2015) reported the findings of a study on both domestic and international students enrolled in an EMI programme in Japan. Prior to the enrollment, students were asked to have at least an intermediate level of English, confirmed either by a TOEFL²⁸ or IELTS²⁹ certification. During a 15-week semester, 34% of the students did not complete the course and left the studies because most of them found the classes more difficult than expected due to language difficulties.

²⁸ TOEFL: *Test of English as a Foreign Language*; it is designed to measure the candidates' ability to use and understand English; the final score is based on the students' reading, listening, speaking and writing performance.

Retrieved from: <https://www.ets.org/toefl> Last access: 26/01/2022

²⁹ IELTS: *International English Language Testing System*; it is used to measure the candidates' English skills through a profile of scores, based on speaking, writing, listening and reading tests.

Retrieved from: <https://www.ielts.org/-/media/pdfs/comparing-ielts-and-cefr.ashx>

Last access: 26/01/2022

In a study carried out in the United Arab Emirates (UAE) (Belhiah and Elhami, 2015), low English proficiency and language issues have led the respondents (students and lecturers) to prefer a bilingual approach in class, which combined the use of both the local language and English. Similarly, code-switching from English to Turkish has been observed in lecturer-student interactions in EMI engineering classes in Turkey, mainly because of low English proficiency levels (Sahan, 2020). A study carried out in Italy during the COVID-19 pandemic, on the shift from face-to-face to online education (Cicillini and Giacosa, 2020b), suggested that low English proficiency levels affected interaction and communication in both the modalities. The EMI medical students involved in the research claimed that the digital modality exacerbated the quality of the interaction, which was already low in face-to-face classes, mainly because of insufficient English and digital expertise.

Although some scholars believe that studying in an EMI context may bring dual learning outcomes (content and language gains), results are mixed. Whereas some studies suggest that using an L2 as the medium of instruction is not detrimental to content understanding and learning (Pérez-Vidal, 2011), others argue that it may not bring benefits either to content learning or to language development. In fact, some students reported difficulties in fully understanding the lessons because of low English proficiency, both of students and lecturers (Airey, 2004; Kim et al. 2014; Belhiah and Elhami, 2015), the oversimplified materials and classes (Tatzl, 2011) and the excessive workload due to language issues (Airey, 2009; Tatzl, 2011; Ackerley, 2017). Thus, the correlation between language proficiency and content learning is still under scrutiny by EMI scholars who are uncertain whether or not EMI negatively affects content learning.

As a consequence, there is a need for much empirical research on students' outcomes and challenges, on what prevents them to achieve successful learning in EMI contexts and can be done to ensure a certain quality of learning. In addition, these findings suggest that more attention should be paid to the language, especially as regards the students and lecturers' English proficiency, to the entry requirements set to enroll in EMI programmes and to possible language support; clearer content

and language goals, together with more innovative tools and materials may also be helpful to boost students' confidence and gain more academic success.

2.4.2 The Common European Framework of Reference for Languages (CEFR) and English language entry requirements

Admission policies and language entry requirements have been recognized by several scholars and institutions as necessary procedures to be established in EMI programmes (Aguilar and Muñoz, 2014; Martinez, 2016; Jeffrey et al., 2019; Dimova, 2020; Galloway and Ruegg, 2020; Cicillini, 2021). In fact, they play a key role in English-mediated classes because having a certain degree of language proficiency is crucial to the effective learning of both content and technical vocabulary, to the acquisition of academic qualifications and to fully appreciate the intercultural and international environment. This is even truer in a multilingual context where the student population is diversified and composed of both local and international learners, with different language backgrounds and competence. Actually, EMI students do not usually have homogeneous English levels, if compared to CLIL students at school level who usually have similar competence (Pecorari, 2020). As a consequence, the issues of limited English skills and of varied English levels in EMI classes have raised questions and concern about how these differences among students, in terms of language competence, should be handled. These have been partially tackled by some institutions through the adoption of admission policies and specific entry requirements to enter EMI degree programmes (Dimova, 2017, 2020; Cicillini, 2021).

Although there is a consensus among most of the EMI scholars that students should have a certain language level before enrolling in EMI programmes, it is still unclear which language entry requirement is the most appropriate for the demands of English-mediated education (Airey and Linder, 2006; Macaro et al., 2018; Aizawa et al., 2020). In addition, not all the institutions offering EMI courses require explicit language entry requirements and proofs of students' English proficiency. This lack of homogeneity among many universities in the world has also regarded the language assessment methods adopted, which usually range from

internationally recognized certifications, e.g., IELTS, TOEFL to in-house tests and previous school qualifications and varied scores (Cicillini, 2021).

Since the launch of the **Common European Framework of Reference for Languages: Learning, teaching, assessment (CEFR)** by the Council of Europe in 2001, the six levels of language proficiency described in the document have been used as a reference tool for measuring the English language skills and “(..) for promoting quality in second/foreign language teaching and learning as well as in plurilingual and intercultural education” (Council of Europe, CEFR 2020:21). The framework aims at establishing international standards for language proficiency and at facilitating cooperation among different countries. In fact, it is used in most European countries and member states of the Council of Europe as well as in many areas beyond the continent (Council of Europe, CEFR 2001; 2020). The CEFR work, which emerged after the development of a project on language education carried out by the Council of Europe during the 1970s and 1980s, was first published in 2001 and further developed and replaced in 2020 by the online publication of the “CEFR Companion Volume with New Descriptors” (Council of Europe, CEFR 2020).

According to the CEFR Descriptive Scheme, communication and tasks performance in a second/foreign language are based on the relationship between the speaker’s *general* and *communicative language competence* (savoir, savoir-faire, savoir-être, savoir-apprendre and linguistic, sociolinguistic and pragmatic competences) and the *communicative language activities* and *strategies* (reception, production, interaction, mediation) (See Figure 1 – The structure of the CEFR descriptive scheme (Council of Europe, CEFR 2020: 32). As a consequence, the four-skill model is based on four “modes” of communication and language activities, which are part of any learning and teaching process. The skills’ development usually vary according to the degree programmes’ design and objectives. For instance, in an EMI context, where the focus is not specifically on the language, the four main language activities may be developed differently, as in the case of reception activities which are probably the most exploited, e.g., attending classes and listening to lecturers and classmates, reading and studying course materials.

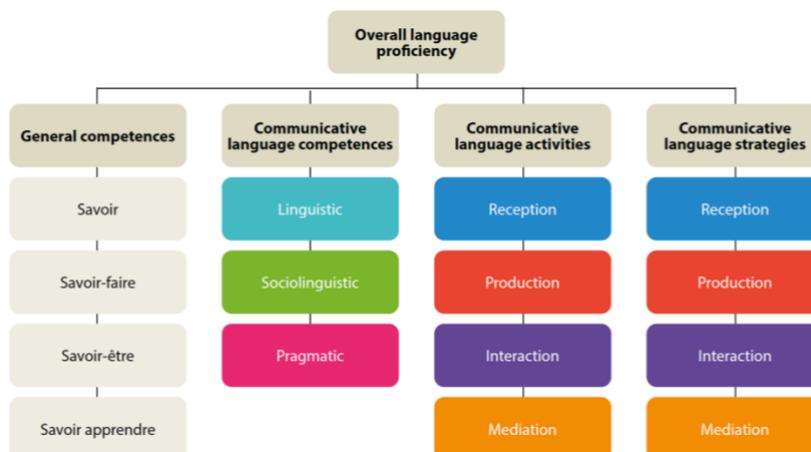


Figure 1 The structure of the CEFR descriptive scheme (Piccardo et al., 2011, cited in Council of Europe, CEFR 2020:32)

As a consequence, by performing certain activities, learners may acquire new strategies, build competences, boost confidence and improve their language proficiency. To measure competence and skills, the CEFR represents proficiency progress through six Common Reference Levels, which are “not intended to be absolute” (Council of Europe, CEFR 2020:36) and are grouped into three categories, as shown in Figure 2:

- A1 – A2 (Basic user);
- B1 – B2 (Independent user);
- C1 – C2 (Proficient user).

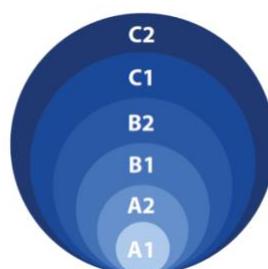


Figure 2 CEFR Common Reference Levels (Council of Europe, CEFR 2020:36)

In the 70s the scholar David Wilkins proposed a model composed of seven levels, in which the seventh was addressed to those who were above the C2 level (e.g.,

professional interpreters and translators working in European institutions). Nonetheless, that additional level was not included in the CEFR global scale (Council of Europe, CEFR 2020), whose levels are “very often subdivided” into additional categories, named “plus levels” e.g. A2+, B1+, B2+.

The CEFR Common Reference Levels scheme is built upwards, from the lowest A to the highest C, even though both A1 and C2 are not considered as the most extreme levels of proficiency (in absolute terms).

- *Basic user: Pre A1, A1, A2, A2+*

Starting from the bottom, the *Pre-A1* level had already been introduced in the CEFR 2001 and then included in the very last version of the CEFR illustrative descriptors (2020); it precedes the A1-A2 levels and refers to those learners who are at the very early stage of language learning and rely upon the use of certain words, formulaic expressions and sometimes even gestures to describe simple tasks. At the level *A1* learners can use simple words to express their ideas, show interests and describe themselves, objects and pictures, by repeating and rephrasing some expressions, while at the *A2* “*Waystage*” they can manage short social exchanges, give simple directions and ask for repetitions. The next stage is the *A2+* “*strong Waystage*”, which reflects the ability to participate in simple conversations and maintain the control of monologues more actively and exchange personal ideas on familiar topics.

- *Independent user: B1, B1+, B2, B2+*

The *B1* “*Threshold Level*” refers to users who have developed the ability to maintain interactions and conversations in different contexts by asking simple questions, paraphrasing short messages, giving examples, even though grammatical mistakes and hesitations may occur. The subsequent *B1+* “*strong Threshold*” shares most of its features with *B1* but speakers can also provide more information and details about certain topics, give reasons and reformulate concepts; however, they may experience difficulties in engaging in formal discussions. The *B2* “*Vantage Level*” is characterized by a certain degree of language awareness which leads learners to correct their mistakes and monitor their competence. At this

stage, users can interact almost fluently, express their opinions by providing examples and arguments, interpret and describe complex content in familiar fields. The B2+ “*strong Vantage*” refers to people who have also developed discourse skills through which they can take part in formal conversations, manage discussions and negotiate the meaning. They are familiar with certain linking expressions and cohesive devices.

- *Proficient user: C1 – C2*

The C1 is characterized by a certain degree of language competence and independence. Users have a good command of broad lexical repertoire, can communicate naturally and fluently by using different styles and registers and can describe and comment complex topics. The next band, the C2, which is the highest level of the CEFR scale, does not refer to native-speaker competence but to the ability to speak precisely and appropriately in different contexts. Speakers can express themselves very fluently, can hold formal conversations, provide elaborate comments and arguments and make complex content (Council of Europe, CEFR 2001, 2020).

Although the CEFR scale has been criticized by some, regarding especially the descriptors clarity and applicability to the diverse contexts where the language is used, the limited attention towards intercultural competence and the methodology and theoretical framework used to build it (Figueras, 2012; North, 2020), it is often considered as a valid instrument to verify students’ proficiency. Actually, the universities that have established English language entry requirements often use the CEFR Common Reference Levels to measure their candidates’ proficiency; the language thresholds to enter EMI programmes differ across the countries and institutions and usually range from C1 to B1 of the CEFR (Galloway et al., 2017; Rose et al., 2019; Cicillini, 2021).

In addition, in order to be admitted in certain institutions, while local students are normally expected to have reached a certain level of English by the end of secondary school, international language certifications are often required for international students, occasionally with certain scores (Dimova, 2020; Pecorari, 2020). In Italy, a study (Cicillini, 2021) investigating the language entry

requirements at bachelor level throughout the country showed that different language thresholds are required for prospective EMI students, mostly (57%) the B2 level; this may be due to the fact that students in Italy are expected to reach that level by the end of secondary school. Nonetheless, it also showed that some Italian universities require lower levels of English, probably because that threshold is not always reached during the school studies. The study also suggested that students' proficiency assessment is carried out through different tools: external tests (38%), such as the international language certifications IELTS, TOEFL, Cambridge are the mostly used by the universities analyzed; and internal tests (26%) such as placement tests and oral interviews managed by the internal staff (Cicillini, 2021).

Similar language entry requirements have been found in other countries offer EMI courses. In Austria, the B2 level is expected to be met by students by the end of school and no language entry requirements are explicitly set to enter EMI programmes because at that stage the students' proficiency is taken for granted. However, issues due to insufficient language proficiency may arise because the B2 level is not always reached after school (Tatzl and Messnarz, 2012). This is also the case of Netherlands where a good command of English is a pre-requisite, especially in the departments of humanities and social sciences where English proficiency is perceived as more important than in technology-based programmes (Wilkinson, 2013; TAEC literature database report, 2020). Nonetheless, the students' English proficiency is a major obstacle to academic quality, given that they do not always reach the recommended B2 level before enrolling in EMI programmes (Hellekjaer, 2010). In the UAE, Rogier's study (2012) reported that a minimum IELTS score of 5.0, corresponding to B1 of the CEFR, was required for prospective candidates to enter EMI programmes (Rogier, 2012). Nevertheless, a more recent study carried in the Arab countries suggested that a higher level of English proficiency, at least an IELTS 6.0 (corresponding to a B2 of the CEFR), would be ideal to cope with the challenges of studying through English (Schoepp, 2018). Halbach and Lázaro (2015) maintained that in 50 Spanish universities the entry requirements were below the C1 level of the CEFR, ranging from a CEFR B1 to B2. The latter (CEFR B2) is also set as the threshold level to enter EMI courses in several countries and institutions: in bachelor and master degree programmes in Denmark (minimum

scores of 6.5 on IELTS and 83 on TOEFL are also accepted) (Dimova, 2020), in Spain (Roquet, Vraciu and Nicolás-Conesa, 2019; Escobar Urmeneta, 2020; Garcia, 2020), and in Italy (Cicillini, 2021).

In most of Chinese and Japanese institutions, standardized language certifications are usually required both for local and international students (Duong and Chua, 2016; Rose and McKinley, 2018). The most common tests used to verify the candidates' proficiency before enrollment are TOEFL, IELTS, Test of English for International Communication (TOEIC)³⁰, Test in Practical English Proficiency (EIKEN)³¹, College English Test (CET)³² and institutional entrance exams (Galloway et al., 2017), with varying scores and levels, sometimes even lower than the A2 level of the CEFR (Galloway et al., 2020). As a consequence, to cope with the students' low proficiency, Japanese universities have begun to offer to their students some language support through a '*preparatory year model*', which consists in undertaking an intensive English language course for one year, before starting their academic studies. This strategy is also adopted by other countries such as the Kingdom of Saudi Arabia, the United Arab Emirates and Turkey (Macaro, 2018; Ozer, 2020). Kamaşak, Sahan and Rose's study (2020) showed that the Turkish institution where their research took place usually required EMI students to give proof of a CEFR B2 or an IELTS score of 5.5 or a TOEFL score of 74 before enrollment. If students do not meet the language pre-requisites set, they must attend a one-year language course and pass the final test before enrolling and beginning their academic studies.

Considering the role played by the lecturers in delivering the content, their proficiency level also deserves some consideration, especially when it is not very

³⁰ TOEIC: *Test of English for International Communication*; it is designed to evaluate English proficiency of people working in international settings. It can verify both receptive skills through the "TOEIC Listening and Reading test" and productive skills through the "TOEIC Speaking and Writing Test". Retrieved from: <https://www.ets.org/toeic> Last access: 05/01/2022

³¹ EIKEN is an abbreviation of the Japanese expression "*Jitsuyo Eigo Gino Kentei*" (*Test in Practical English Proficiency*). It is a popular assessing method to measure students' English proficiency in Japan. It is composed of two stages: the first verifies reading, listening and writing skills while the second evaluates the speaking skills. Retrieved from: <https://www.eiken.or.jp/eiken/en/eiken-tests/overview/> Last access: 05/01/2022

³² CET: *College English Test*; it is used in China to assess the undergraduate students' proficiency and is composed of different sections: listening, reading, cloze, writing, translation and speaking (Zheng and Cheng, 2008). Last access: 05/01/2022

high. A comparative study on teachers' attitudes towards EMI in Italy, Austria and Poland claimed that the lecturers' English proficiency plays a significant role in the quality of education and in the students' academic achievements (Dearden and Macaro, 2016). Whereas Polish and Austrian people have good levels of English, at least to hold a simple conversation, in Italy the situation is more problematic, as reported in a survey carried out by the European Commission (2012). Actually, the general low level of English proficiency among Italians is one of the major reasons why Italy lags behind many European countries in the provision of EMI programmes (Costa and Coleman, 2013; Pulcini and Campagna, 2015; Dearden and Macaro, 2016; Brogini and Costa, 2017; Guarda, 2018; TAEC literature database report, 2020).

To address the problem of lecturers' proficiency, several universities have set some internal criteria to select their teaching staff (Kling, 2019), e.g., English proficiency certifications, academic qualifications obtained abroad, previous EMI experience (Dafouz-Milne et al., 2014; Macaro et al., 2018; Rose et al., 2019; Sánchez-García, 2020). As regards English proficiency, the most common recommended threshold level ranges from CEFR C1 to B1 (Airey, 2011; O'Dowd, 2018; Sánchez-García, 2020; Macaro, Jiménez-Muñoz and Lasagabaster, 2019) even though there is no definitive benchmark to teach in English-taught programmes nor clear evidence that a certain level of English is required of all the EMI lecturers (Galloway et al., 2020). To ensure higher teaching quality and improved performance, a 30-hour language development course was designed by some scholars from the University of Rijeka. Through a wide range of intensive teaching sessions, collaborative projects and debates, the programme aimed at raising awareness of the lecturers' pragmatic role in EMI classes, at developing teaching skills and at fostering self-reflection and self-confidence (Drljača Margić and Vodopija-Krstanović, 2018).

To measure the lecturers' English skills, the University of Copenhagen has developed an oral performance test, namely the 'Test of Oral English Proficiency for Academic Staff' (TOEPAS) whose main objectives are to verify and certify the lecturers' proficiency and teaching skills and to link the TOEPAS to the CEFR

scale³³. Through a 20-minute lecture, prepared in advance by the candidate, and other approximately 20 minutes of interaction and dialogues, the examiners are able to assess the lecturers' language skills. The certification provides feedback on the lecturers' English proficiency and their teaching skills and should give some advice on how lecturers could improve their abilities (Dimova, 2017; Kling, 2013, 2015; Kling and Stæhr, 2012).

Overall, these studies illustrate how important English proficiency is in EMI programmes, regardless of the stakeholders' role, and how necessary admission criteria are to guarantee high quality education and academic success. Indeed, establishing certain language entry requirements for students' admission may bring several advantages, e.g., homogeneous language competence within the class; more effective understanding and learning; more chances to appreciate the intercultural and international environment. Yet, admission criteria may also lead to unequal opportunities and may preclude some students from the access to certain EMI programmes, especially for those who have a good knowledge of the discipline taught but their low proficiency levels do not allow them to enroll in the programmes. Moreover, even though the CEFR B2 seems to be the most common level required from prospective students to enter EMI programmes, previous research suggests different language thresholds within the countries involved and even within the same institution. This may encourage the most skilled students to apply for courses where entry requirements are higher, creating a wider gap between more and less talented students and among the national institutions (Cicillini, 2021).

Consequently, much research is needed to identify the most appropriate level of English needed to cope with the challenges posed by EMI and how language-related issues can be managed, considering the peculiarities of such educational approach which does not include any language learning outcomes. In addition, the students' intention to improve their proficiency should not be ignored, which is in many cases the most common motivating factor to opt for English-

³³ See the document "Linking the TOEPAS with the CEFR: technical report" (2018), which is one of the TAEC project outputs. The report was written after a three-day standardization meeting held at the University of Copenhagen (2018) between the TAEC members and the Centre for Internationalization and Parallel Language Use (CIP).

<https://www.dipartimentolingue.unito.it/do/progetti.pl/Show?id=rren>. Last access: 27/01/2021

mediated education. In fact, the continuous exposure to language input leads students to believe that a certain degree of incidental learning and language improvement may take place anyway, even though such assumption is not supported by all the scholars investigating the EMI phenomenon. That being said, to cope with these issues, reasonable language entry requirements and outcomes should be established together with stronger language support to all the students who may need it during their academic career.

Chapter 3. Research questions and methodology

3.1 Introduction

This chapter deals with the research design of this thesis by firstly outlining the starting hypothesis and the research questions which have driven the study, and the data collection. The main objective is to observe the students' language experience in an EMI medical school in Italy and to determine whether their English language proficiency improves during a certain period of time. This chapter, then, presents the context of the study, that is, the *University of Torino* and specifically the EMI degree programme in *Medicine and Surgery*, and the internationalization policies adopted. The research instruments and the procedures used to collect and analyze the data are also described together with the participants involved in the study. The last part of the chapter offers a glance at the ethical considerations and the limitations of the study.

3.2 Research questions, hypotheses and novelty

Considering the steady growth of EMI programmes all over the world in the last thirty years, some questions have been raised about the role played by English in this special context and in the students' learning process and language proficiency. A few studies have investigated the students' language gains and English language development in the EMI context (See Section 2.3) but none of these has investigated the medical field in the Italian context. Given the paucity of empirical studies investigating whether any form of language improvement may take place in EMI classes, this research focuses on a medical English-mediated setting and seeks to address the following research questions:

RQ1: What is the students' language experience in an EMI degree programme in *Medicine and Surgery*?

- A) What are the main motivations that drive students to enroll in an EMI degree programme in Italy?
- B) To what extent are students motivated to improve their English proficiency?
- C) What are the students' perceptions of studying in an EMI programme?

RQ2: Does the students' English proficiency improve during two academic years in an EMI setting?

- A) If so, which skills have mostly improved?
- B) Is language improvement voluntary or incidental?

The investigation is conducted through longitudinal observation and testing during two academic years, 2019/2020 and 2020/2021. The main reason to opt for this observational research technique was to observe the students' language experience over an extended period of time that lasted two years.

Specific assessment areas:

- Students' linguistic profile and motivations to enroll in an EMI degree course and expectations of it.
- Students' feedback on their academic and EMI experience; improvement in English³⁴.
- Reading and listening assessment through language tests at the beginning of the first year and the end of the second year.
- Students' final feedback.

Considering the students' immersion in the EMI context and the exposure to the English language, it may be hypothesized that the students' English skills may progress incidentally while they are focused on the curricular disciplines.

In light of the above considerations, the main aims of this thesis are:

- 1) to explore the medical students' language experience in an EMI setting;

³⁴ Italian entry levels were also observed as regards international students. However, this aspect has not been taken into consideration in the present study.

- 2) to identify the major drivers to study *Medicine and Surgery* in English in a non-anglophone country;
- 3) to observe any change of attitudes over an extended period of time;
- 4) to verify to what extent English language improvement takes place during two academic years.

3.3 Research design

The methodological approach used in this thesis combines both quantitative and qualitative methods. In order to increase the validity of the data collected, a methodological triangulation of data was used. Indeed, the mixture of different methods may balance the strengths and weaknesses of each method adopted to gather data (Creswell et al., 2003; Cohen et al., 2011) and may increase the reliability of the research.

The quantitative and qualitative data were collected through the administration of three online questionnaires and two language tests in two academic years. Both the instruments went through a piloting stage before the experimentation. The questionnaires, composed of open-ended and closed-ended questions and Likert scale items³⁵, focused on the students' attitudes and motivations to enroll in an EMI course, the expectations of the programme, the self-evaluation of their language development and improvement (if any), and feedback at the end of each year (See Section 3.6.1). The language tests, which had different question formats, e.g., multiple choice, gap-filling and matching tasks, assessed the students' English receptive skills at the beginning of their first year and at the end of their second year (See Section 3.6.2). In sum, while the questionnaires were aimed at investigating the learners' perceptions and opinions on their learning experience in an EMI setting and on their English improvement, the tests effectively measured their language gains (if any) in the receptive skills.

³⁵The Likert scale is a rating system which was introduced by the scientist Rensis Likert in 1932. It is widely used for measuring attitudes, perceptions and opinions (often but not necessarily) of large groups of people through the use of a range of answers, also named *anchors*, to certain questions (Robinson, 2014 and also consulted in <https://www.britannica.com/topic/Likert-Scale>). Last access: 23/07/2021

3.4 Context of the study

3.4.1 The *University of Torino* and its internationalization policy

This research is student-focused and deals with the students' language experience in an English-taught degree programme in *Medicine and Surgery* at the *University of Torino*. This university is one of the largest and ancient institutions in Italy, among the top 300 universities around the globe and the 4th in Italy, as confirmed by the Academic Ranking of World Universities (ARWU)³⁶. In the academic year 2020/2021, it hosted over 82,000 students, both domestic (94%) and international (6%) and since the Bologna process, in 1999, it has included internationalization as a key aspect of its institutional policies. It has involved a broad range of actions and strategies to become more attractive, competitive and innovative. The most significant actions undertaken have included: global academic collaboration through joint projects and international initiatives, e.g. double degree and international PhD programmes; recruiting of visiting professors and researchers; virtual, blended and physical mobility programmes for students and staff, e.g. *Erasmus+ projects*, *UNITA - Universitas Montium*³⁷, *Marco Polo*³⁸ project; students' language preparation for internationally recognized certifications; and introduction of EMI degree programmes. The latter, which have considerably increased since the end of the 90s, are mostly but not exclusively offered at master level³⁹, as in most of the institutions (91%) throughout Italy (Cicillini, 2021).

As shown in Tables 3 and 4, in the academic year 2021/2022 the *University of Torino* offered 15 EMI programmes, one single-cycle, two BA and twelve MA

³⁶ Retrieved from the Academic Ranking of World Universities (ARWU) and UNITO webpages <https://www.shanghairanking.com/institution/university-of-turin> <https://en.unito.it/about-unito/unito-glance/unito-figures> Last access: 03/08/2021

³⁷ UNITA - Universitas Montium is a virtual mobility project (Erasmus +) which promotes the students' virtual participation in classes, workshops and lectures offered by a range of European universities. <https://en.unito.it/international-relations/unita-universitas-montium/unita-virtual-mobility> Last access: 02/08/2021

³⁸ The Marco Polo project aims at offering to Chinese students the chance to learn and improve their Italian language skills, prior to the effective enrollment in the Italian university. <https://en.unito.it/international-relations/marco-polo-and-turandot-projects> Last access: 02/08/2021

³⁹ Retrieved from *Universitaly* and *University of Torino* webpages https://www.universitaly.it/index.php/cercacorsi/universita?lingua_corso=en <https://en.unito.it/studying-unito/programs/degree-programs> Last access: 03/08/2021

degree programmes. For the purpose of this study, the *Medicine and Surgery* single cycle programme was taken into account and investigated.

A.Y. 2021/2022								
Level	Single cycle	BA	BA	MA	MA	MA	MA	MA
Years	6	3	3	2	2	2	2	2
Degree programme	Medicine and Surgery	Business and Management	Global Law and Transnational Legal Studies	Areas and Global Studies for International Cooperation	Biotechnology for neuroscience	Business Administration	Cellular and Molecular Biology	Digital skills for Sustainable Societal Transitions

Table 3 EMI programmes offered at the *University of Torino* (1)

The data are divided into levels (BA, MA and Single Cycle), name and years of the degree programme.

A.Y. 2021/2022							
Level	MA	MA	MA	MA	MA	MA	MA
Years	2	2	2	2	2	2	2
Degree programme	Economic analysis and policy	Economics	European Legal Studies	Materials Science	Molecular Biotechnology	Quantitative Finance and Insurance	Stochastics and Data Science

Table 4 EMI programmes offered at the *University of Torino* (2)

3.4.1.1 The EMI degree programme in *Medicine and Surgery*

The *University of Torino* offers to prospective students the opportunity to study medical subjects in two different areas of the city and in two languages, Italian and English. While the Italian-taught programme is based in the city center at the “Molinette” hospital, the English-taught one is located at the “San Luigi Gonzaga” hospital, in Orbassano, a town in the outskirts of Torino. The latter, where this study takes place, is a single-cycle programme (six years) held at the Department of Clinical and Biological Sciences, which has been recently activated, starting from the academic year 2017/18. When this research began, this programme was in its third year of experimentation; thus, the first six-year cycle has not been completed yet to date.

The access to both the Italian and English-taught courses is regulated by restricted admission procedures and a fixed number of enrollments, established by law. Specific entry requirements are determined at national level by the Italian Ministry of University and Research (MUR); prospective candidates have to indicate which university they would prefer to apply at in the country. To be admitted to the English-taught courses, students must give proof of an Italian secondary school diploma or an equivalent foreign certification; then, they must sit and pass the International Medical Admission Test (IMAT)⁴⁰, which is in English and takes place simultaneously in all the state universities where the degree programme in *Medicine and Surgery* is offered. If the candidates pass the entry test, they are ranked based on the score obtained and allocated to a certain university where they have to meet the requirements set by that institution. Language entry requirements and admission policies are individually managed by each university (TAEC EMI Handbook, 2019; Dimova, 2020), as for instance the English level needed and the assessment process, often conducted through either internal tests – e.g. placement tests and oral interviews carried out by the staff – or external tests – e.g. internationally recognized certifications (Cicillini, 2021). At the *University of Torino*, evidence of English proficiency is required from candidates, corresponding to a B2 level of the CEFR or above, as reported in the Annual report (Scheda SUA)⁴¹ available online. If at the beginning of the term weaknesses arise in some subjects or in the English language, students are expected to attend specific remedial courses, namely additional learning obligations (ALO), during their first year and pass the final exams.

⁴⁰ IMAT: *International Medical Admissions Test* is developed by the Cambridge Assessment Admissions Testing in collaboration with the MUR. It is a 100 minute subject-specific admission test in English for prospective candidates who want to enroll in *Medicine and Surgery* and “Dentistry” courses in Italy. Retrieved from: <https://www.admissionstesting.org/for-test-takers/imat/about-imat/>

Last access: 04/08/2021

⁴¹ Scheda SUA: *Scheda Unica Annuale*. The university annual report provides detailed information about the course, the admission procedures, the goals and the assessment methods. Retrieved from: <https://www.universitaly.it/index.php/scheda/sua/49045> Last access: 04/08/2021

3.5 The participants

The participants identified for this research are first-year medical students enrolled in *Medicine and Surgery* in the A.Y. 2019/2020. After obtaining the legal and ethical permissions from the *University of Torino* and the Department of Clinical and Biological Sciences to conduct this longitudinal study, starting from the A.Y. 2019/2020 until the A.Y. 2020/2021, the students' informed written consent was collected (See Appendix 8). One hundred students were involved in the study even though their participation in the data collection activities varied during the two academic years observed (See Section 4.2.1.1). Two students dropped out of university during the first year and as a consequence, 98 of them participated in the study. Among these, 35% were international students while 65% were Italian.

Table 5 below shows a summary of the students' demographic characteristics, obtained from the first online questionnaire (See Sections 3.6.1 and 4.2.1) sent at the beginning of their first year. As for gender, 58% of the respondents were female and 42% male; they were mostly between 17 and 19 years old (53%) Italian native speakers (69%) who attended a "Liceo"⁴² as secondary school education (83%). Instead, 35% were international students whose mother tongues were Persian (10%), Bangla (4%), Hindi (4%), Turkish (4%), Hebrew (2%), Arabic (2%), English (1%), French (1%), Greek (1%), Hungarian (1%) and Vietnamese (1%). In fact, approximately 30% - 40% of the overall places are usually reserved for foreign students. This is corroborated by the enrollments in the A.Y. 2020/2021, during which the 400 students enrolled in the degree course (from year 1 to year 6) came from 33 different countries all over the world⁴³. The remaining students, instead, were Italian (65%).

⁴² Liceo: a type of secondary school which offers more academic-oriented education (Costa and Coleman, 2013).

⁴³ Retrieved from https://www.medinto.unito.it/do/home.pl/View?doc=About_us.html

Last access: 09/08/21

Characteristics	Category	Answers given	%
Age range		N=89	
	17-19 years	47	53%
	20-25 years	42	47%
Gender		N=90	
	Female	52	58%
	Male	38	42%
Nationality		N=90	
	Italian	58	65%
	Other (international)	32	35%
Mother tongue		N=84	
	Italian	58	69%
	Persian	8	10%
	Bangla	3	4%
	Hindi	3	4%
	Turkish	3	4%
	Hebrew	2	2%
	Arabic	2	2%
	English	1	1%
	French	1	1%
	Greek	1	1%
	Hungarian	1	1%
	Vietnamese	1	1%
Secondary school		N=86	
	“Liceo”	71	83%
	Vocational	13	15%
	International	2	2%

Table 5 Participants’ demographic characteristics

The data are divided according to the students’ age, gender, nationality, mother tongue and secondary school attended.

3.6 Research instruments

In order to obtain both quantitative and qualitative data, two research tools were employed: online questionnaires and language tests. To verify the validity and reliability of the instruments, they were piloted before starting the experimentation. Data were gathered throughout two academic years, 2019/2021 and 2020/2021.

3.6.1 Questionnaires

The first instrument used to collect data was an online questionnaire, which was developed by using Google Drive and the Google forms application and sent

by email to the participants. The decision to use this tool was motivated by the need to collect data from the medical students regarding their motivations, perceptions and expectations. Considering that this is a longitudinal study, the participants were sent three online questionnaires in different moments of the data collection:

- *Questionnaire one*: at the beginning of the students' first year (November 2019);
- *Questionnaire two*: at the end of the students' first year (July 2020);
- *Questionnaire three*: at the end of the students' second year (July 2021).

Each questionnaire will be referred to throughout this research as Q1 (Questionnaire one), Q2 (Questionnaire two) and Q3 (Questionnaire three) and each item will follow the questionnaire number – for instance: questionnaire one, question 2 will be referred to as Q1-2.

Different types of questions were included in all the questionnaires: *closed-ended* questions, which were useful to obtain specific information in certain areas by providing a limited number of options; *Likert scale* items, which elicited the participants' opinions and attitudes (Dörnyei, 2003) and offered the opportunity to observe the degree of satisfaction, frequency, quality and difficulty of certain tasks by providing specific Likert-scale response anchors⁴⁴ (Vagias, 2006); and *open-ended* ones, which encouraged the respondents to express their own opinions and ideas on certain points. In addition, each questionnaire provided a short description of the project, the content and the tasks to complete, even though the students had already been informed about the objectives of the doctoral project and formally asked to participate.

⁴⁴ Some Likert-Type Scale Response Anchors used in the questionnaires: degree of satisfaction (from Extremely satisfied to Not satisfied at all), quality (from Excellent to Very poor), difficulty (from Very easy to Very difficult) (Vagias, 2006).

3.6.1.1 Pilot study questionnaire

Prior to the questionnaires administration to the medical students, three pilot versions were sent to some lecturers and colleagues in order to verify the instruments' feasibility and effectiveness. Respectively, the first was sent in October 2019, the second in May 2020 and the third in June 2021. The participants were asked to provide comments and suggestions about the tools designed; as a matter of fact, the piloting procedure was useful to detect some weaknesses such as wording, time limit, quantity and quality of the items.

3.6.1.2 Administration of the questionnaires

The three revised questionnaires were sent by email to the medical students involved in the study and were structured as follows:

- *Questionnaire one* (See Appendix 1) was sent by email at the beginning of their first year, in November 2019; it was divided into three sections and contained twenty items – rating scales, closed-item and open-item questions. It took approximately 20 minutes to complete.

(1) The first part investigated the students' demographic information and personal background through the first five items of the questionnaire (age, gender, nationality, mother tongue, type of secondary school attended).

In the second (2) section (items 6 to 14), the respondents were asked to self-evaluate their English skills according to the CEFR descriptors, on a scale from A1-A2 (basic user) to B1-B2 (independent user) and C1-C2 (proficient user). They were invited to reflect on their abilities in certain language activities according to the CEFR scale in which the tasks are classified as follows: reception (listening and reading), production (speaking and writing), interaction (spoken and written) and mediation. For the purpose of this study, mediation was not taken into account. In this section, the students also provided additional information about their previous contacts with the English language by choosing from a range of different options and alternatives (e.g., preparation for internationally recognized language

certifications, prior experience studying through the medium of English, the use of the language outside the academic context).

(3) The third and last section (items 15 to 20) focused on the students' motivations to enroll in an EMI degree programme in *Medicine and Surgery* in Italy, their expectations of the programme, the first impressions they had and the degree of difficulty of certain tasks, on a five-point Likert scale (from very easy to very difficult).

- *Questionnaire two* (See Appendix 2) was shared with the students by email at the end of their first year, in July 2020 and aimed at gaining feedback on their first year, their language experience in the EMI environment and expectations of the new academic year. It contained three sections and twenty-five items and took around 25 minutes to complete.

(1) The first section (items 1 to 3) investigated the degree of satisfaction felt by the respondents as regards the year passed and the quality of education. The questions were designed on a five-point Likert scale (from extremely satisfied to not satisfied at all).

(2) The second section focused on the students' language experience in EMI classes and their English proficiency. They were asked to reflect on their language skills and improvement during the year (items 4 to 6). Some closed-ended questions (items 7 to 13) focused on the respondents' language habits when they speak to lecturers and classmates, attend classes and sit exams.

(3) The third section (items 14 to 25) focused on the students' experience in the EMI setting (class attendance, intercultural environment, quality of interaction, issues due to the shift from face-to-face to online education during the COVID-19 pandemic) and on their expectations of the new academic year.

The respondents were also invited to leave comments, clarifications and examples of their answers by completing some open-ended questions, in order to freely express their personal opinions.

- *Questionnaire three* (See Appendix 3) was also administered online by email, at the end of the students' second year, in July 2021 and was composed of twenty questions. It took approximately 20 minutes to complete.

(1) The first part of the questionnaire comprised questions about the respondents' personal experience in the EMI classroom. The five-point Likert scale questions (items 1, 3, 7) focused on the students' degree of satisfaction of the previous year and the difficulty of certain activities in class. The remaining questions (items 2, 4, 5, 6) were closed-ended questions which investigated their habits and perceptions of the EMI environment.

(2) In the second part (items 8 to 20), students were asked to reflect on their language skills and language habits through different types of questions. In closed-ended question 8, they self-evaluated their skills according to the CEFR scale; items 9, 10 and 11 focused on the students' English improvement and to what extent they voluntarily put effort into it. In the remaining questions, which comprised closed-ended, open-ended and Likert scale questions, they expressed their impressions and expectations of their language experience in an EMI environment, their classmates and lecturers' language proficiency. Some questions were voluntarily repeated in all the questionnaires (Q1, Q2, Q3) in order to compare the participants' answers over two years.

3.6.2 Language tests

The second tool used to gather data was a language test, which was not a standardized test, but it was specifically created for the students involved in this research. Considering the goal of the study, that is the observation of the students' language learning experience and progress, two tests were administered in the course of two academic years, at the beginning of their first and at the end of the second year. These will be referred to throughout this thesis as Test 1 (T1) and Test 2 (T2).

3.6.2.1 Main features of language tests (1 & 2)

To develop the language tests used for this research, several steps were followed, as suggested by the *Manual for Language Test Development and Examining. For use with the CEFR* (See Figure 3 The basic testing cycle, Council

of Europe, 2011: 18). In addition, some of the criteria suggested by research in this field were considered (Bachman, 1990; Bachman and Palmer, 1996; McNamara, 2000). According to the Bachman's *process of measurement* (1990), the process of measurement requires three main steps: (1) quantify the items of the instrument – *quantification* – in the forms of both numerical and non-numerical categories; (2) identify its main *characteristics*, as the degree of ability intended to test; (3) establish some *rules and procedures*, so that the test can be replicable in different conditions and with other participants. In addition, to obtain consistent and valid scores, he argued that the test should also be reliable. The instrument is valid if it measures and focuses on the abilities intended to be assessed; it is reliable if it follows specific rules and is replicable in different circumstances (Bachman, 1990; Council of Europe, 2011).

The development of the instrument began by planning the *characteristics of the test takers*, the *goals*, the *timeline* and the *logistics*, as shown in Figure 3.

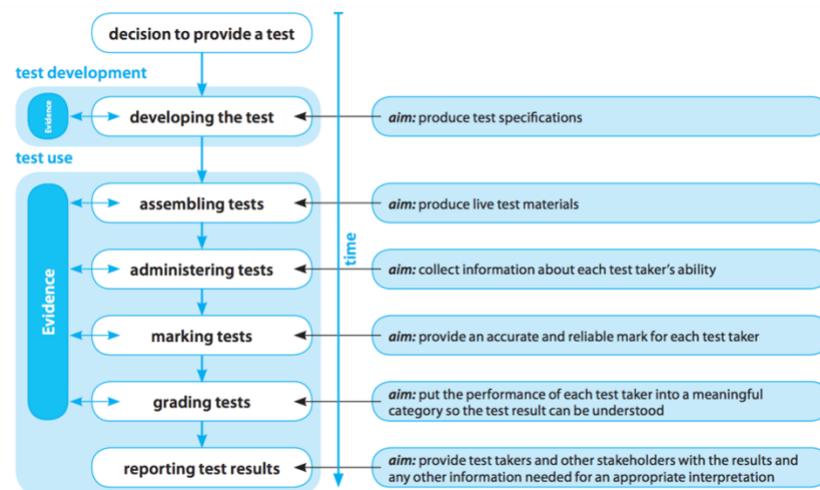


Figure 3 The basic testing cycle (Council of Europe, 2011:18)

The participants of this study were medical students enrolled in an EMI degree programme in *Medicine and Surgery* at the *University of Torino* (See Section 3.5). The purpose of both the language tests was to measure the students' English

proficiency and language development in two years. The tests were created by using the Moodle⁴⁵ platform and by opting for a *Quiz activity*.

The tests were designed considering the objectives set in the medical language course and the final test. The **Medical language** is a 40-hour mandatory course based on a B2 level, since the language entry requirement to be accepted in the Medicine and Surgery EMI programme is set at B2 of the CEFR. It is taught by an EFL language assistant in the first and third year of the degree programme, focusing on different learning objectives. The first-year English course mainly aims at developing the learners' passive skills – reading and listening – while the third-year English classes are more focused on developing the learners' active abilities – writing, speaking and mediation. Since the data collection of this study was carried out during the first two years of the degree programme, the medical language course offered in the third year was not further investigated.

As far as the first-year medical language course is concerned, various topics taken from scientific and clinical settings but also from the students' daily-life are proposed. Most of the activities planned include grammar concepts and the most commonly used forms in scientific texts; general and scientific English functions; general and technical vocabulary; reading and listening comprehension; useful expressions to describe charts and graphs. As reported on the online university portal⁴⁶, at the end of the course, students are assessed through a written and an oral exam lasting two hours and thirty minutes. The written exam is divided into four parts: 1) a multiple-choice grammar test based on the most frequent language structures used in scientific English; 2) a grammar test focused on the use of verbs; 3) a listening comprehension; 4) a reading comprehension. In the oral exam, instead, the students' speaking and communicative skills are tested starting from the description of a medical chart.

In accordance with the teaching and learning goals set by the Medical language course, grammar and vocabulary items as well as comprehension

⁴⁵Moodle: is an online learning platform used all over the world, which allows for personalized learning environments. Content (e.g., texts, media, files) can be uploaded, edited, shared and downloaded through the use of an internet connection.

<https://moodle.org/?lang=en> Last access: 05/08/2021

⁴⁶ Medical language's course webpage: <https://www.medinto.unito.it/do/corsi.pl/BrowseYears>
Last access: 20/03/2022

exercises were included in both language tests. Moreover, the language entry level required from students to enroll in *Medicine and Surgery*, that is the B2 of the CEFR, was considered to develop the tests. The main features and functions of the B2 descriptor were taken into account, according to which users at this stage are able to perform all the communicative language activities (reception, production, interaction, mediation) as follows:

(..) can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in their field of specialization.

Can interact with a degree of fluency and spontaneity that makes regular interaction with users of the target language quite possible without imposing strain on either party.

Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options (Council of Europe, CEFR 2020:175).

This study focuses on the students' reception skills (listening and reading) for different reasons: (1) the type of classes offered during the first and second years are mostly theoretical and practical; (2) the type of exams and activities proposed during the two years observed are mainly written and practical; (3) the *Medical language* course, to attend and pass in the first year, whose main objective is to develop the students' reading and listening English abilities, as stated in the course webpage⁴⁷ and reported below:

“The course syllabus aims to provide the student with the necessary skills and knowledge for the future understanding of scientific-medical-clinical texts in order to advance in the medical degree course in English (..), listen to and understand the meaning of specific scientific and non-specific texts”.

(4) and the exploitation of both the listening skills during the lectures and seminars and the reading abilities through the use of publications and clinical reports written in English. Indeed, reception “involves receiving and processing input”, which is

⁴⁷ Medical language's course webpage: <https://www.medinto.unito.it/do/corsi.pl/BrowseYears>
Last access: 20/03/2022

what students are supposed to do when they attend EMI classes (Council of Europe, CEFR 2020:47).

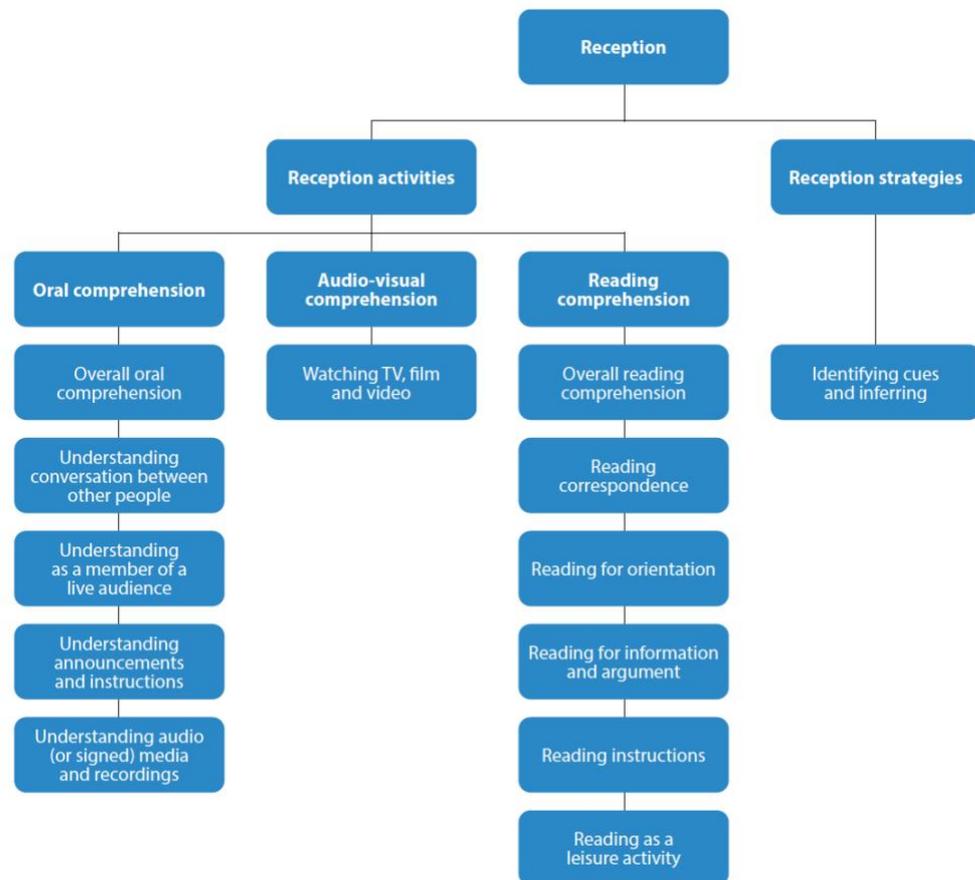


Figure 4 Reception activities and strategies (Council of Europe, CEFR 2020:47)

The receptive activities usually encompass *oral*, *audio-visual* and *reading comprehension*, as shown in Figure 4. According to the CEFR, learners are able to do certain activities, as described by the following “Can do statements”. Considering the students’ language entry level, the development of the two language tests was based on the following B2 descriptors:

- *Overall oral comprehension:*

B2. Can understand the main ideas of propositionally and linguistically complex discourse on both concrete and abstract topics delivered in standard language or a familiar variety, including technical discussions in their field of specialization. Can

follow extended discourse and complex lines of argument, provided the topic is reasonably familiar, and the direction of the argument is signposted by explicit markers (Council of Europe, CEFR 2020:48).

- *Understanding conversation between other people:*

B2. Can with some effort catch much of what is said around them but may find it difficult to participate effectively in discussion with several users of the target language who do not modify their language in any way. Can identify the main reasons for and against an argument or idea in a discussion conducted in clear standard language or a familiar variety. Can follow chronological sequence in extended informal discourse, e.g., in a story or anecdote (Council of Europe, CEFR 2020:49).

- *Understanding audio (or signed) media and recording*

B2. Can understand most documentaries and most other recorded or broadcast material delivered in the standard form of the language and can identify mood, attitude, etc. (Council of Europe, CEFR 2020:52)

- *Watching TV, film and video*

B2. Can understand most TV news and current affairs programmes. Can understand documentaries, live interviews, talk shows, plays and the majority of films in the standard form of the language or a familiar variety (Council of Europe, CEFR 2020: 53).

The listening comprehensions used in this study (See Table 6) were designed by considering features of both oral and audio-visual comprehension, as suggested by the CEFR descriptors. Indeed, the BBC videos chosen for both the language tests combined several aspects of oral comprehension, conversation between other people through the use of recorded material and visual comprehension.

The two language tests have the following structure:

Timing	Format		No.of Qs	Test focus
READING 30'	Task 1	A 4-option multiple choice task involving a single text; approximately 1000 words.	10	Detailed comprehension, specific information, vocabulary and grammar.
	Task 2	A 4-option multiple choice task involving a single text; approximately 1000 words.	6	Vocabulary.
	Task 3	A matching task involving a continuous text divided into 9 paragraphs and 11 headings; approximately 1000 words.	9	Detailed comprehension, meaning from context.
LISTENING 25'	Task 1	A gap-filling task involving a video recording of approximately 11 minutes. Played twice.	20	Details and specific information.
	Task 2	A 3-option multiple choice task involving a video recording of approximately 11 minutes. Played twice.	10	Detailed comprehension.
	Task 3	A true-false task involving a video recording of approximately 11 minutes. Played twice.	5	Overall comprehension.

Table 6 Overall structure of the language tests, divided into timing, format, number of questions and test focus

- *format of the test and number of items*: as shown in Table 6, the tests were composed of two parts, a reading comprehension and a listening comprehension. In each part, the test takers had to complete three tasks which focused on certain language aspects – e.g., detailed and overall comprehension, vocabulary and grammar items.

The reading comprehension consisted of a scientific text taken from the Scientific American journal⁴⁸ available online. The article's difficulty was checked by consulting the Global Scale of English (GSE) Teacher toolkit⁴⁹ offered online by the Pearson Education publishing. The GSE allows teachers to develop their own assessment materials according to the learners' characteristics and level of proficiency. Based on the CEFR global scale, it provides users with different tools to verify the degree of difficulty of grammar and vocabulary items and of whole

⁴⁸ <https://www.scientificamerican.com/> Last access: 19/07/2021

⁴⁹ Global Scale of English (GSE) Teacher toolkit. <https://www.english.com/gse/teacher-toolkit/user/textanalyzer> Last access: 28/03/2022

texts. In order to verify whether both articles chosen for the two reading comprehensions (in T1 and T2) were of the same level, i.e., B2, the *text analyzer* application available online was run. The GSE programme confirmed that both articles were between the B1 and the B2 levels of the CEFR.

Each reading comprehension was composed of three tasks and 25 questions. Specifically:

Task 1: ten 4-option multiple choice questions, focused on the detailed comprehension of the text, vocabulary and grammar items;

Task 2: six 4-option multiple choice questions, focused on the vocabulary used in the article;

Task 3: nine multiple matching questions (detailed comprehension), focused on a detailed comprehension of the text.

The listening comprehension included a video (11 minutes approximately) from the BBC World News, section *Horizons documentaries*⁵⁰. The main features of the B2 descriptor and the scientific topics studied in class were taken into account to select the most appropriate videos. The test was divided into three tasks and 35 questions.

Specifically:

Task 1: twenty gap-filling questions about specific information;

Task 2: ten 3-option multiple choice questions focused on the detailed comprehension of the video;

Task 3: five true-false questions about the overall comprehension of the video.

These will be referred to in this thesis as Test one (T1) and Test two (T2), Test one Listening (T1L) and Test one Reading (T1R), Test two Listening (T2L) and Test two Reading (T2R). Below, a breakdown of the tasks and questions of both Test one and Test two (See Table 7 and 8).

⁵⁰ <https://www.bbc.co.uk/programmes/n13xtmgj> Last access: 28/03/2022

T1	T1R	T1L
Task 1	1; 2; 3; 4; 5; 6; 7; 8; 9; 10;	1; 2; 3; 5; 6; 7; 8; 11; 12; 13; 21; 22; 23; 28; 29; 30; 31; 32; 33; 34;
Task 2	11; 12; 13; 14; 15; 16;	4; 9; 10; 19; 20; 24; 25; 26; 27; 35;
Task 3	17; 18; 19; 20; 21; 22; 23; 24; 25.	14; 15; 16; 17; 18.

Table 7 Detailed structure of Test one

T2	T2R	T2L
Task 1	1; 2; 3; 4; 5; 6; 7; 8; 9; 10;	1; 2; 3; 4; 5; 6; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 32; 33; 34; 35;
Task 2	11; 12; 13; 14; 15; 16;	7; 8; 9; 10; 11; 12; 25; 26; 27; 28;
Task 3	17; 18; 19; 20; 21; 22; 23; 24; 25.	13; 14; 29; 30; 31.

Table 8 Detailed structure of Test two

- *the duration of the test* was originally 90 minutes (one hour and a half) but after the piloting procedures it was reduced to 55 minutes (See Section 3.6.2.2).

3.6.2.2 Pilot tests (1 & 2)

To verify the validity and reliability of the material designed, the language tests were piloted. This phase, also named *try-out*, aimed at trying and improving the tests (when necessary) before the official administration to the medical students (Council of Europe, 2011). The two pilot tests will be referred to in this thesis as Pilot test one (PT1) and Pilot test two (PT2). The pilot procedures were conducted with two groups of students, enrolled in the department of Foreign Languages, Literatures and Modern Cultures at the *University of Torino*, in Italy. The students had similar characteristics to the participants of the main study: they were of the same age (19-20 years old) and level of English proficiency (B2 level). They were contacted by email and asked to take the pilot tests. The participation was on a voluntary basis.

- **Pilot test one** (See Appendix 4) was administered in November 2019; 34 first-year students voluntarily took part in the try-out. To identify the questions that

posed greater problems, the data were plotted in figures 5 and 6. In those figures, it is possible to identify the number of students that answered correctly to the reading questions (Figure 5) and to the listening ones (Figure 6). On the vertical axis (Y-axis) of both figures 5 and 6 the number of students (out of 34) is represented. The questions are reported on the horizontal ones (X-axis). The red bars refer to the wrong answers given by more than 60% of the participants.

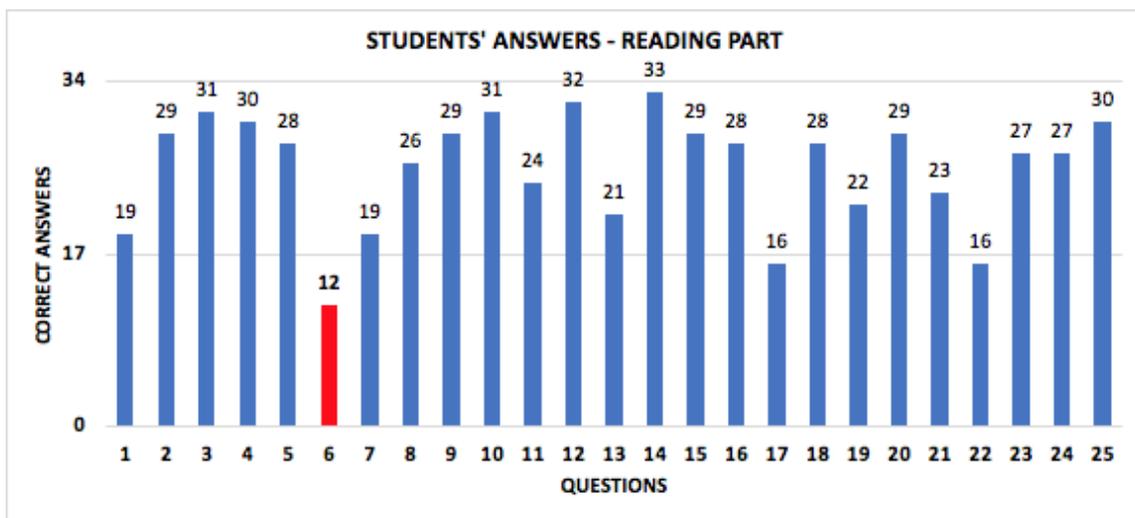


Figure 5 Reading scores in Pilot test 1 (PT1)

The test questions are displayed (N=25) on the X-axis; the number of students (out of 34) who answered correctly to PT1 (reading) are shown on the Y-axis. The red bars refer to the wrong answers given by more than 60% of the participants, as question n.6.

The findings displayed in figures 5 and 6 showed some weaknesses as regards the difficulty and clarity of certain questions and the time limit to finish the test.

As regards the questions, it was decided to modify those that were misunderstood by more than 60% of the students because of their phrasing, focus and vagueness. As a consequence, two questions were modified, i.e., n. 6 (65%) of the reading part and n. 14 (76%) of the listening part. The others remained identical.

In question n.6 of the reading comprehension, students had a twofold task, firstly to understand the overall meaning of the article and then choose the appropriate modal verb among four different options, as shown below.

- 6) The author's team found out that:
A amino acids with a high network score should be destroyed
B amino acids are more attractive than the virus.
C all the amino acids will be destroyed by a good therapy.
D the virus may be destroyed by a good therapy.

While the correct answer was A (underlined), many students opted for the C which was a future form. Considering that only 12 out of 34 students chose the correct answer (See Figure 5) and 65% did it wrong, some changes were made, as shown below in *italics*.

- 6) The author's team found out that:
A amino acids with a high network score should be destroyed
B amino acids are more attractive than the virus.
C all the amino acids *should be* destroyed.
D the virus may be destroyed by a good therapy.

In the listening part, the only question which was modified was n. 14 because only 8 participants out of 34 did it correctly (See Figure 6). They had to decide whether the statement was true or false. Similarly to question n.6 of the reading part, they firstly had to gain a general understanding of the content and then identify the use of modal verbs, as shown below.

- 14) It can replace traditional surgery. True - False

Considering that 76% did it wrong, the question was changed by opting for a different modal verb, that is *will*.

- 14) It *will* replace traditional surgery. True - False

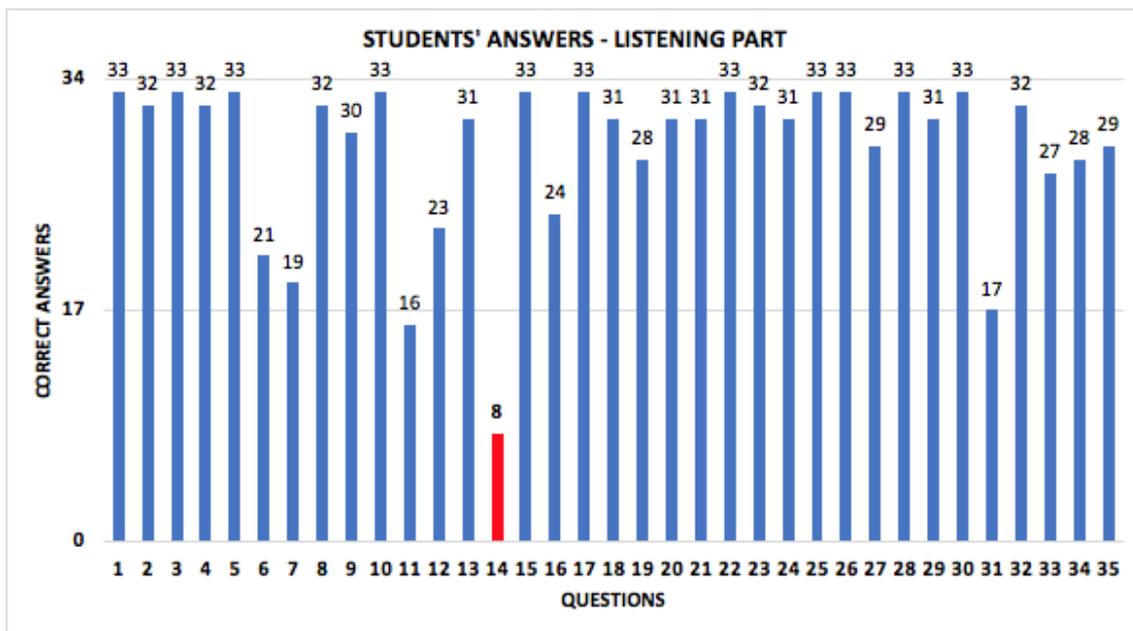


Figure 6 Listening scores in Pilot test 1 (PT1)

The test questions are displayed (N=35) on the X-axis; the number of students (out of 34) who answered correctly to PT1 (listening part) are shown on the Y-axis. The red bars refer to the wrong answers given by more than 60% of the participants, as question n.14.

- **Pilot test two** (See Appendix 5) was administered in May 2021. Thirteen second-year students participated in the piloting procedure. Although the participation in PT2 was relatively low compared to PT1, it was helpful to detect some mismatches between questions and options and some wording that might be ambiguous or difficult to understand. The number of the respondents out of 13 who gave the correct answers to the reading part is displayed in figure 7 while the responses to the listening part are shown in figure 8. Similarly to figures 5 and 6, all the questions are displayed on the X-axis, which were twenty-five for the reading part (Figure 7) and thirty-five for the listening part (Figure 8); instead, the number of students who answered correctly is shown on the Y-axis. The red bars refer to the wrong questions given by more than 60% of the respondents.

Figure 7 shows a breakdown of the students' answers given in the reading part.

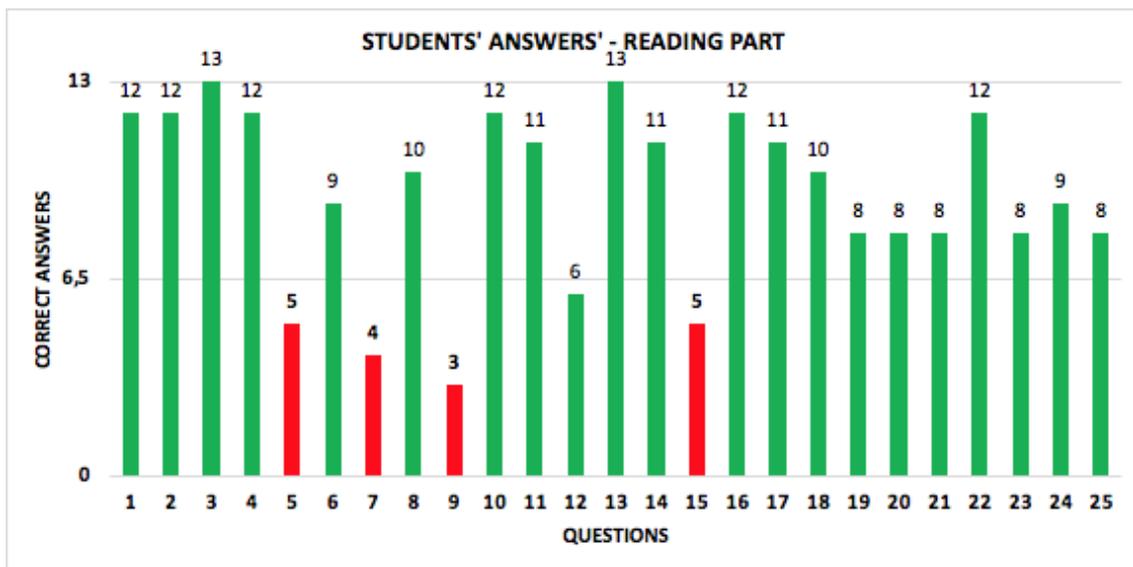


Figure 7 Reading scores in Pilot test 2 (PT2)

The test questions are displayed (N=35) on the X-axis; the number of students (out of 13) who gave the correct answers to PT2 (reading part) are shown on the Y-axis. The red bars refer to the wrong answers given by more than 60% of the participants, as questions n.5, n.6, n.9, n.15.

Most of the mistakes occurred in task 1, specifically in questions n.5 (62%), n.7 (69%) and n.9 (77%), followed by n.15 (62%) in task 2. In task 1, the participants were asked to choose the correct answer among four options on the overall comprehension task and the use of the passive form with reporting verbs.

5) People of colour

- A) are believed to be the sickest patients treated at the university hospital
- B) are confirmed to being the sickest patients treated at the university hospital
- C) are thought to being the sickest patients treated at the university hospital
- D) are claimed to have been the sickest patients treated at the university hospital

Considering that most of the students opted for the option D, it was replaced by the following:

5) People of colour

- A) are believed to be the sickest patients treated at the university hospital
- B) are confirmed to being the sickest patients treated at the university hospital
- C) are thought to being the sickest patients treated at the university hospital
- D) *are called to be* the sickest patients treated at the university hospital

A student rate of 69% did not answer correctly question n. 7, which focused on the general meaning of the article.

- 7) In San Joaquin Valley
A) no white people live there
B) living conditions used to be very poor
C) people still struggle to get bank loans
D) discrimination dates back to the beginning of the 21st century

Option B, which was the one chosen by most students, was modified as shown below.

- 7) In San Joaquin Valley
A) no white people live there
B) living conditions *are terrific*
C) people still struggle to get bank loans
D) discrimination dates back to the beginning of the 21st century

Similarly, in question n. 9 the participants had to concentrate on the overall comprehension of the text.

- 9) The Foster Farms was sued by
A) the workers
B) a civil rights organization
C) Singh's mother
D) the employers

77% of students selected option B, which was incorrect, and for this reason was changed.

- 9) The Foster Farms was sued by
A) the workers
B) *the clerks*
C) Singh's mother
D) the employers

Question n.15 focused on the vocabulary used in paragraph 5 of the article.

- 15) Harassment (paragraph 5)
A) behavior that upsets someone
B) feeling that people get when something unfair, painful, or bad happens
C) a situation in which there is no fairness and justice
D) the crime of stealing from somewhere or someone

Considering the percentage (62%) of errors, it was decided to modify options B and C.

- 15) Harassment (paragraph 5)
 A) behavior that upsets someone
 B) *being unsuitable or wrong in a certain situation*
 C) *a situation in which there isn't any injustice*
 D) the crime of stealing from somewhere or someone

As regards the listening comprehension, some questions in tasks 1 and 2 were slightly modified because of the errors made by the participants. While in task 1 students had to write down the terms heard in the recording and fill in the gaps, in task 2 they had to choose among three multiple choice options, which focused on general comprehension. Figure 8 presents an overview of the answers by highlighting the correct ones in green and the wrong ones in red.

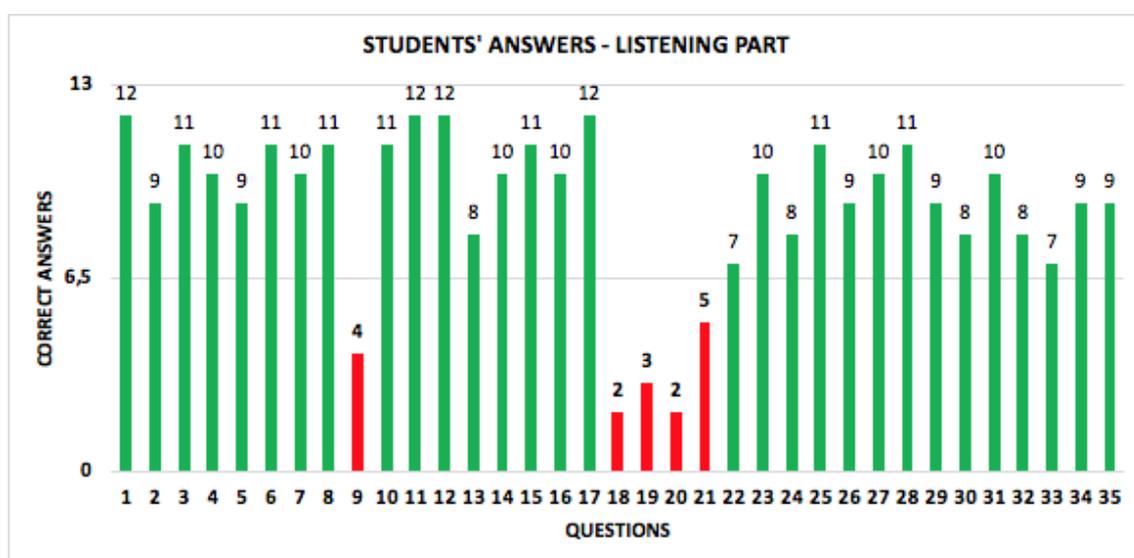


Figure 8 Listening scores in Pilot test 2 (PT2)

The test questions are displayed (N=35) on the X-axis; the number of students (out of 13) who gave the correct answers to PT2 (listening part) are shown on the Y-axis. The red bars refer to the wrong answers given by more than 60% of the participants, as questions n.9, n.18, n.19, n.20, n.21.

69% of the students did not answer question n. 9 correctly; as a consequence, the wording of the question was changed.

- 9) What are the green "grabber" toy and the Lego structure examples of?
 A) syringe pumps
 B) gear sets
 C) medical therapies

It was modified as follows:

9) *What is the Lego structure example of?*

As a result of the errors made in questions n.18 (85%), n.19 (77%), n.20 (85%) and n.21 (62%), word order was changed.

According to Erin O'Donohue of "Embrace":
how many babies die every year within the first month of their lives **(15)**
how many infants die in the first day in the world: **(16)**
how many infants die in the first few weeks: **(17)**
main cause of death: **(18)**..... **(19)**..... **(20)**
such as **(21)**..... **(22)**
When a child is born, they lack the **(23)** **(24)**

The paragraph was changed as shown below in *italics*:

According to Erin O'Donohue of "Embrace":
how many babies die every year within the first month of their lives **(15)**
how many infants die in the first day in the world: **(16)**
how many infants die in the first few weeks: **(17)**
main causes of death: (18)..... (19)..... (20) related to low birth rate and (21).....
including (22)
When a child is born, they lack the **(23)** **(24)**

As regards the time to complete the language tests, the participants were given 90 minutes, divided into 45 minutes for each part (listening and reading). However, most of them finished in less than one hour. For this reason, the time limit was modified and reduced to 55 minutes, divided into 30 minutes for the reading comprehension and 25 minutes for the listening part.

To sum up, the piloting procedures were helpful to detect inaccuracies and possible errors (e.g., incorrect use of certain prepositions and ambiguous wording); in fact, some items were modified or deleted because were considered difficult or misleading. In addition, they were crucial for the development of tailor-made instruments that may measure the students' receptive skills and offer a detailed description of the medical students' English proficiency and potential improvement in the time frame observed (two academic years).

3.6.2.3 Administration of language tests (1 & 2)

After the try-out, the language tests were modified and checked. Once the formal approval from the Head of the department was obtained, the administration of the tests began. This phase is called *test delivery* (Council of Europe, 2011).

Test one (T1) (See Appendix 6) was administered in presence in December 2019, at the beginning of the students' first academic year and 30 out of 100 participated. The reduced response rate was due to problems on the set day (bad weather and transport strike). For this reason, the absent students were given a second chance to take the test online, in the Moodle platform. Overall, 47 out of 100 were involved in the experimentation. Despite some follow-up emails sent every two weeks after the first one, the remaining students did not take the test. This may be due to the fact that the Coronavirus outbreak⁵¹ influenced their daily routines and learning process.

Test two (T2) (See Appendix 7) was administered online in June 2021, at the end of the students' second year and they were given approximately a month to complete the test. Since two students dropped out of university, the test was sent to the remaining 98. Some follow-up emails were sent every two weeks after the first in order to increase the response rate. Overall, 50 out of 98 learners took the second language test.

3.7 Data analysis

Through the use of online questionnaires and language tests, both quantitative and qualitative data were collected and analyzed. Several steps were followed, as suggested by *the basic testing cycle* (Council of Europe, 2011):

⁵¹ The Coronavirus disease (COVID-19) is an infectious disease that has been spreading all over the world and affecting millions of people since the beginning of the year 2020. Retrieved from: https://www.who.int/health-topics/coronavirus#tab=tab_1
Last access: 23/06/2021

- *marking*: the quantitative data collected from the tests were marked automatically by using Moodle, while the qualitative data collected from Task 1 of the listening comprehension were marked manually. Then, the data were stored on Excel worksheets.

Similarly, the quantitative data collected from the questionnaires were marked by means of the Google form application whereas the qualitative data were categorized manually and stored on Excel worksheets;

- *grading*: for each language test, the participants received a score, which included both the listening and the reading parts. Correct answers were worth 1 mark each while errors were worth 0. The minimum score to pass the language tests was 36 out of 60 questions, corresponding to 60% of correct answers. Specifically, the minimum score to pass the reading part was 15 correct answers out of 25; instead, to pass the listening part the minimum score to obtain was 21 out of 35 answers (60%). The overall score was calculated by adding the correct answers manually and automatically by using Moodle. The data were then analyzed by using Microsoft Excel and the Statistical Package for the Social Sciences (SPSS).

- *reporting*: the results are discussed in Chapter 5.

3.7.1 Quantitative data

The quantitative data gathered from the questionnaires, developed through the Google forms tool, were exported onto Excel worksheets as shown in Figure 9. The first column displays the students' identification number whereas the following shows the questions and the answers given by the respondents. Then, the data were analyzed by calculating sums, percentages and means of the responses (Figure 9 example of a questionnaire (Q2) exported on an Excel worksheet).



A	B	C	D	E	F	G
Students		1) How satisfied are you	Can you explain why?	2) Have your expectation	Can you explain why?	3) How satisfied are you
1		Slightly satisfied		Partially		Very satisfied
2		Extremely satisfied	It was amazing to live sui	Yes	Both my social and acad	Very satisfied
3		Very satisfied		Yes		Very satisfied
4		Moderately satisfied		Partially		Very satisfied
5		Moderately satisfied		Partially		Slightly satisfied
6		Moderately satisfied	I responded with modera	Partially	Of course, everything bei	Moderately satisfied
7		Slightly satisfied	Corona changed the exa	No		Slightly satisfied
8		Moderately satisfied	COVID restrictions	Partially	They were fully met in th	Moderately satisfied
9		Moderately satisfied	Some professors were e	Partially	I was not expecting an e	Very satisfied
			Not enough practical acti			
			Also, BLS training shoul		As an international stude	
			Medical students should		On the other hand, the S	
10		Moderately satisfied		Partially		Slightly satisfied

Figure 9 Example of a questionnaire (Q2) exported on an Excel worksheet

The first column displays the students' identification number, the following ones show the questions and answers given by the respondents

As regards the data obtained from the language tests collected through Moodle, they were firstly exported from the online platform into Excel worksheets. They were coded in a data matrix, in *cases per variables form*, as shown in Table 9. The *cases*, reported in the rows, corresponded to the respondents and the *variables*, displayed in columns, referred to the scores obtained. The questions were given the following codes: from T1Q1L onwards for the listening comprehension, which stand for *Test One Question One Listening*, and from T1Q1R onwards for the reading part, referring to *Test One Question One Reading*. To maintain anonymity, the participants were given an identification number, from 1 to 100. Instead, their answers were given a value, which was 1 for each correct response and 0 for each error. An additional value was given to all the open responses of Task 1 (gap filling task) of the listening part, which was 0.5 points for any spelling mistake.

Students	T1Q1L	T1Q2L	T1Q3L	T1Q4L	T1Q5L	T1Q6L	T1Q7L	T1Q8L	T1Q9L	T1Q10L	T1Q11L	T1Q12L	T1Q13L	T1Q14L	T1Q15L	T1Q16L	T1Q17L
1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	0	1
2	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1
5	1	1	1	1	1	1	0.5	1	1	1	1	0.5	1	1	1	0	1
8	1	1	1	1	1	1	0.5	1	1	1	0.5	1	1	0	1	0	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
12	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	1
20	1	1	1	1	1	1	0	1	0	1	1	0	1	1	0	0	1
21	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	0
24	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
32	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
33	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0
34	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1
35	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
41	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1
52	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
54	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0
58	1	0	1	0	0	1	0	0	1	0	0	1	0	1	0	0	0
59	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1	0	1
62	0	1	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0
65	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1

Table 9 Excel worksheet (cases and variables)

The rows (cases) correspond to the participants; the columns (variables) refer to the scores obtained.

A new Excel worksheet was created to compare the two groups of participants, the students who took the pilot tests (PT1 and PT2) and the medical ones who took the final language tests (T1 and T2). It contained an additional column, named MED-LANG (medicine – foreign languages) and new values: 1 for the medical students and 2 for the pilot students. Table 10 shows some of the medical students' answers.



Students	MED-LANG	T1Q1L	T1Q2L	T1Q3L	T1Q4L	T1Q5L	T1Q6L	T1Q7L	T1Q8L	T1Q9L	T1Q10L	T1Q11L	T1Q12L	T1Q13L	T1Q14L	T1Q15L
1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0
2	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1
5	1	1	1	1	1	1	1	0.5	1	1	1	1	0.5	1	1	1
8	1	1	1	1	1	1	1	0.5	1	1	1	0.5	1	1	0	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0
20	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1	0
21	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0
24	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
32	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
33	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1
34	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
35	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
41	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1
52	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
54	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
58	1	1	0	1	0	0	1	0	0	1	0	0	0	1	0	0
59	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1

Table 10 Excel worksheet (medical students)

The rows correspond to the participants while the columns to the scores obtained.

The coding process on Excel was done to process and analyze the data statistically through the data analysis software package SPSS⁵², version 27, described in the next section.

3.7.1.1 Statistical analysis

SPSS was used to run a statistical analysis of the data collected. It is usually used to analyze a certain amount of data and to run *descriptive statistics* such as mean, minimum and maximum and standard deviation⁵³ and *inferential statistics*, as for instance Paired-Samples T Tests. To perform the analysis, it was necessary to complete the coding process in Excel, as shown in Table 9 and 10, and upload the coded Excel worksheet to SPSS. In this statistical programme, two ways of visualizing the data were possible: Variable view and Data view. The *Variable view* (Table 11) displays the different variables, whose features must be set according to the data, such as:

- the *Name* of the variables (e.g., T1Q1L);
- the *Type* of variables, that can be numeric, string, scientific notation, date, etc. In this study, only numeric data are included.
- the *Width*, which refers to the number of digits used to display the values (e.g., 2);
- the *Decimal*, which reports the number of decimals to visualize (e.g., 1);
- the *Label*, which is a descriptive definition of the variables (e.g., Test 1 listening question 1);
- the *Values* associated with each digit (i.e., 0 for a full error, 0,5 for a partial error, 1 for a correct answer);

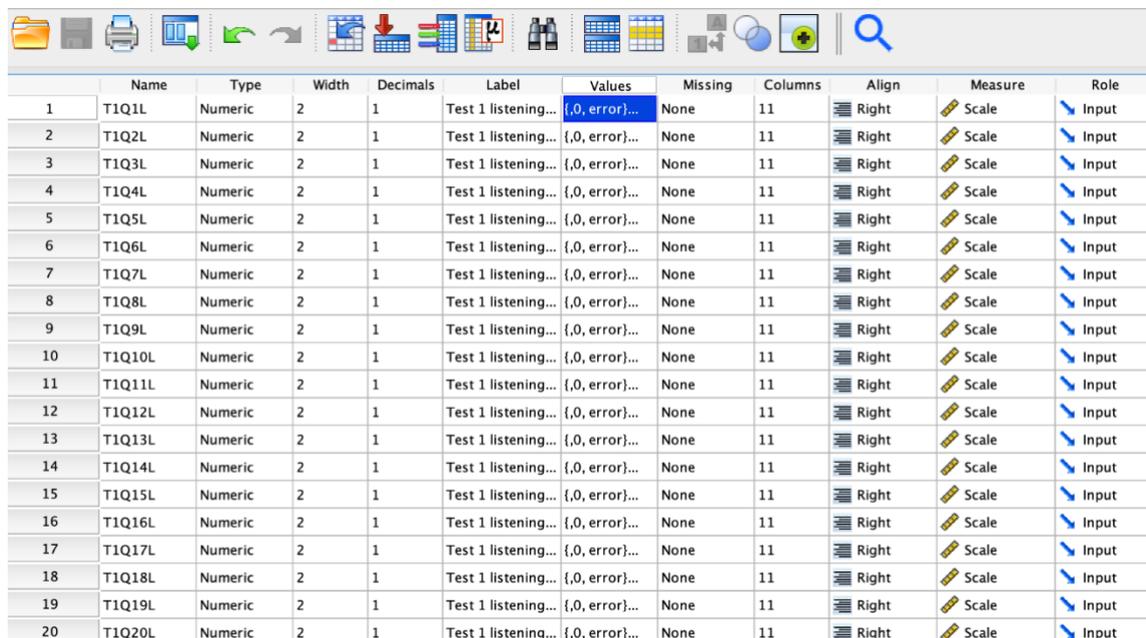
⁵² SPSS stands for “Statistical Package for the Social Sciences” and is a statistical software used to present, interpret and analyze numerical data.

Retrieved from: <https://libguides.library.kent.edu/SPSS/GettingStarted>

Last access: 11/11/2021

⁵³ Standard deviation is “the square root of the sums of squared distances of the individual values from the mean” (Brezina 2018:11). It measures the dispersion of the data from the mean. In fact, the higher the standard deviation, the more the data are spread out and are not homogeneous (Sullivan 2011).

- *Missing* refers to those data values that should be treated as missing values. In this study, there are no missing values;
- the *Columns*, refers to the width of the columns in the Data view spreadsheet (i.e., 11);
- *Align* refers to the alignment of the content in the spreadsheet (e.g., right);
- *Measure* refers to the level of measurement for the variables, which can be nominal, ordinal or cardinal. *Nominal variables* are not measurable or structured, meaning that each category cannot have higher values than the others (e.g., gender); *ordinal variables* can be ranked and structured but are not measurable (e.g., working positions); *scale* or *cardinal variables*, which are those used in this study, represent ordered categories with a certain metric and distance to each other (e.g., Likert scales; marks ranging from 1 to 0.5 and 0);
- the *Role* played by each variable in the data analysis. In this study, all the variables are used as independent variables (i.e., input).



	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	T1Q1L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
2	T1Q2L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
3	T1Q3L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
4	T1Q4L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
5	T1Q5L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
6	T1Q6L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
7	T1Q7L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
8	T1Q8L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
9	T1Q9L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
10	T1Q10L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
11	T1Q11L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
12	T1Q12L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
13	T1Q13L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
14	T1Q14L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
15	T1Q15L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
16	T1Q16L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
17	T1Q17L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
18	T1Q18L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
19	T1Q19L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input
20	T1Q20L	Numeric	2	1	Test 1 listening...	{0, error}...	None	11	Right	Scale	Input

Table 11 Coded data matrix in SPSS – Variable view

Each column displays the set of variables according to the data collected such as name, type, width, decimals, label, values, missing, columns, align, measure and role.

Instead, the *Data view* shows the matrix coded in Excel (Table 12), in which the numeric values shown refers to the students' scores, obtained from T1 and T2, ranging from 0 (full error), 0.5 (partial error) and 1 (correct answer).

Visible: 126 of 126 Variables

	T1Q1L	T1Q2L	T1Q3L	T1Q4L	T1Q5L	T1Q6L	T1Q7L	T1Q8L	T1Q9L	T1Q10L	T1Q11L
1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	,0	1,0	1,0	1,0
2	1,0	,0	1,0	1,0	1,0	1,0	,0	1,0	1,0	1,0	1,0
3	1,0	1,0	1,0	1,0	1,0	1,0	,5	1,0	1,0	1,0	1,0
4	1,0	1,0	1,0	1,0	1,0	1,0	,5	1,0	1,0	1,0	,5
5	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
6	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
7	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
8	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
9	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
10	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
11	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	,0
12	1,0	1,0	1,0	1,0	1,0	1,0	,0	1,0	,0	1,0	1,0
13	1,0	1,0	1,0	1,0	1,0	,0	,0	1,0	1,0	1,0	1,0
14	1,0	1,0	1,0	1,0	1,0	,0	1,0	1,0	1,0	1,0	1,0
15	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
16	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
17	1,0	,0	1,0	1,0	1,0	1,0	,0	1,0	1,0	1,0	1,0
18	1,0	1,0	1,0	1,0	1,0	,0	1,0	1,0	1,0	1,0	1,0
19	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
20	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0

Data View Variable View

Table 12 Data view in SPSS

Each column shows the scores obtained by the students in the tests

In SPSS it is possible to perform various inferential statistical tests, whose main goal is to verify a hypothesis. In this study, we wanted to verify whether the average result of the first test was different from the second one. To do so, it was necessary to use a test which compared the mean values obtained from the two tests, namely Mean_T1 and Mean_T2. Since the data collected from T1 and T2 were obtained from a single group of students at two different times (at the beginning of the first year and the end of the second year), the *paired-samples T Test* was used.

If the null-hypothesis was true, Mean_T2 may be higher than Mean_T1 for that specific sample (i.e. there was an improvement in the marks from T1 to T2). Instead, if we had used another sample, the same results would not have been guaranteed. For instance, if we had conducted the same experiment with different students, Mean_T2 may be lower than Mean_T1 (i.e. no improvement). When the null-hypothesis is true, the difference between the mean values is said to be not

statistically significant. Thus, the results would not be general and would not have any scientific interest.

If the null-hypothesis was rejected, it could be stated with a certain level of confidence that the repetition of the same experiment with a different sample having similar characteristics would give the same results (e.g., that Mean_T2 is higher than Mean_T1). In this case, the result is said to be statistically significant and could be extended to the entire population considered (e.g., to students with similar characteristics to the sample considered).

The mentioned level of confidence is necessary to verify whether the test results are reliable, in case of statistical significance. For this reason, the statistical tests also provide a **p-value**, which ranges from 0 to 1 and establishes the confidence level of the test result. The p-value must be interpreted as the probability of obtaining different results from those of the experiment. For practical reasons, we considered value $1-p$, which corresponded to the probability of obtaining the same result. For instance, if Mean_T2 was higher than Mean_T1, showing an improvement in the students' performance, and a p-value of 0.3, $1-p$ would be 0.7. This means that, if we repeated the same experiment with other groups of students, 70 of them would improve and 30 would not. Thus, a p-value of 0.7 would not be sufficient to make any general claim. For this reason, the statisticians set a threshold of 0.95 for $1-p$ (or 0.05 for p). The higher $1-p$ is (or the lower p is), the higher the test result confidence is.

The p-value is classified as follows and by the use of some asterisks*, to indicate the degree of significance:

- If the p-value is higher than 0.05 ($1-p < 0.95$, i.e., 95%), the result is not statistically significant (no asterisks);
- If the p-value is lower than 0.05 ($1-p > 0.95$, i.e., 95%), the result is statistically significant (one asterisk *);
- If the p-value is lower than 0.01 ($1-p > 0.99$, i.e., 99%), the result is highly statistically significant (two asterisks **);

- If the p-value is lower than 0.001 (1-p> 0.999, 99,9%), the result is extremely statistically significant (three asterisks ***) (Brezina, 2018; McLeod, 2019).

3.7.2 Qualitative data

The marking and grading processes together with the analysis of the qualitative data, collected from both the instruments used, were conducted manually. As regards the *language tests*, the qualitative data were obtained from Task 1 of the listening comprehension, which focused on the students' ability to recognize and write the vocabulary heard in the video recording. The 20 gap-filling items were categorized onto Excel sheets according to the students' answers. As shown in Table 13, the respondents who made vocabulary mistakes were listed in the rows while their errors were displayed in columns. Misspellings in compound words and singular/plural forms were worth 0.5 points (partial error).

STUDENTS	T1Q7L	T1Q11L	T1Q12L	T1Q21L	T1Q29L	T1Q31L	T1Q33L	T1Q34L
	cartilage	kidneys	livers	knees	tall	rose	go	through
student 3	carthilage	kidney	liver			rise		
student 4	cartilagine	kidney				those		trough
student 20			liver					
student 26			liver	neeks	taller		goes	
student 31					taller			
student 32			liver				goes	
student 35						raised		
student 42		kidney	liver					

Table 13 Qualitative data obtained from language test 1

The first column contains the identification numbers of those students who made vocabulary errors; the following show the vocabulary questions from Task 1.

As regards the *questionnaires*, the open-ended questions were treated as qualitative data and analyzed through the qualitative content analysis (Dörnyei, 2007). This analytical tool was used to interpret textual data and identify the most significant and recurrent themes emerged from the questionnaires. The analysis followed different steps:

- the raw data were first organized and *transcribed* onto Excel worksheets;

- data were *coded* manually according to the major themes identified, in order to reduce the amount of textual data collected and highlight the most significant one for the research; the recurrent patterns were grouped into different categories that included English proficiency, language experience in EMI, and motivations and expectations of EMI.

- *interpretation* and *discussion* followed.

3.8 Ethical considerations

Ethical approval was obtained from the Department of Clinical and Biological Sciences (*University of Torino*). The Dean of the department, the school board and the students were informed of the research's objectives, data collection and time frame before starting. While the school board was first informed by email and then by some face-to-face meetings and a live presentation at the department, the students were contacted by email and then asked to sign a form of informed consent (See Appendix 8), obtained from the *University of Torino*. Students were also informed that the participation was voluntary, the final scores would not affect their academic records and responses to the questionnaires would be kept anonymous and used for scientific purposes only.

3.9 Limitations of the study

This research is limited by the time when it was conducted and the effective number of participants. Considering that this is a longitudinal study, it covered two academic years (2019/2020 and 2020/2021) during which the COVID-19 emergency was declared, approximately around the beginning of the year 2020. The pandemic influenced the data collection because of the uncertainty of the time and the sudden and unexpected change of people's lives. As regards the academic community, the students had to adapt to a new learning environment that was online, to improve their digital skills, to cope with internet connection issues and the lack of appropriate digital tools to study at home. The difficult and

unprecedented situation, together with the impossibility to meet in person and administer the questionnaires and language tests in face-to-face modality, influenced the data collection. As a result, it was difficult to reach all the students and involve all of them in the data collection activities, albeit the numerous follow-up emails.

Nevertheless, the collected data appear to be solid enough to provide reliable evidence to answer to the research questions posed at the onset of this study. A possible follow-up with the same participants at the end of the 6-year-cycle may provide further confirmation of the trend emerged during the 2-year trial observation. The next chapters present and discuss the findings.

Chapter 4. Findings

4.1 Introduction

This chapter presents the findings obtained from the research tools used for the data collection –three questionnaires and two language tests. The questionnaires were designed to gain insights into the students’ academic experience and perceptions of studying through the medium of English, by means of open, closed-ended and Likert scale questions. The language tests measured the students’ receptive skills at the beginning of the first and at the end of the second academic year. In this chapter, the answers to the questionnaires and the characteristics of the language tests are presented according to specific aspects; as a consequence, the items are not discussed in sequential order.

Since this is a longitudinal study, exploring the EMI students’ language experience during two academic years, in this chapter the results obtained are drawn together according to the time frame considered. The first section deals with the students’ first academic year 2019/2020 in *Medicine and Surgery*: through the observation of the participants’ answers and comments to questionnaires one (Q1) and two (Q2), their language experience together with their personal motivations and perceptions of the academic quality of this degree programme are presented. In addition, the students’ English proficiency is also evaluated by observing their performance in the first language test (T1) delivered. The second section of the chapter delves into the second academic year 2020/2021: students’ opinions and degree of satisfaction of their learning experience and language progress in two years are presented, on the basis of their responses to questionnaires three (Q3) and the scores obtained from language test two (T2). The last part of the chapter compares the students’ language outcomes obtained from T1 and T2.

4.2 Presenting the findings: first academic year

In this section, the results obtained in the first year from questionnaire one (Q1) and two (Q2) and from language test one (T1) will be presented and discussed.

4.2.1 Findings retrieved from questionnaires one and two

The findings of the two questionnaires (See Appendices 1 and 2) are presented and discussed as follows: students' characteristics and English background, motivations and perceptions of EMI education and degree of satisfaction at the end of the first year.

4.2.1.1 Participants' characteristics

The questionnaires designed for this study were sent by email to the students enrolled in the A.Y. 2019/2020 in the EMI degree programme in *Medicine and Surgery* at the *University of Torino*. Q1 was completed by 90 students out of 100, even though some did not answer all the questions proposed as they were not compulsory. The very first section (Q1-1 to 5) focused on the students' characteristics as regards their age, gender, nationality, mother tongue and type of school attended before enrolling in the medical programme observed (See Section 3.5). 58% of the students enrolled in the first A.Y. of *Medicine and Surgery* was female and 42% male, ranging from 17-19 years of age (53%) to 20-25 (47%). Among the 20-25-year-old students, roughly 70% were not domestic students but international, reflecting some differences in the school systems and personal learning backgrounds. As for the Italian students, they usually enroll in university programmes soon after the end of secondary school, at the age of 18-19 years old. No student was older than 25, since medical studies in Italy are usually completed by the age of 27, as confirmed by a report carried out by AlmaLaurea⁵⁴ in 2016. As

⁵⁴ AlmaLaurea is an interuniversity consortium based in Italy, funded by more than 70 Universities. Its main aim is to investigate the students' educational pathway and their employment status after graduation. It encourages dialogue between graduates and employers by publishing the graduates' CV online and making contacts easier.

<https://www.almalaurea.it/informa/news/2017/09/05/identikit-dei-laureati-medicina-e-chirurgia>

Last access: 28/09/2021

regards their nationality, more than half of them are Italian (65%) and 35% are international students, mainly coming from the Middle East and the Asian countries (66%) and Europe (33%). In terms of mother tongue, Italian is spoken by the majority (69%) of the students, followed by Persian (10%), Bangla (4%), Hindi (4%), Turkish (4%), Hebrew (2%), Arabic (2%), English (1%), French (1%), Greek (1%), Hungarian (1%) and Vietnamese (1%).

With respect to their school background, most of them (83%) attended a “liceo”, a type of secondary school offering a more academic-oriented education (Costa and Coleman, 2013); 15% studied in technical schools, which are more vocationally oriented (Costa and Coleman, 2013; Campagna and Pulcini, 2014), whereas only 2% attended international schools. 50% claimed to have studied single subjects in English in secondary school, through the Content and Language Integrated Learning (CLIL) approach, according to which a foreign language is adopted as the main medium to teach specific disciplines (Coyle et al., 2010; San Isidro and Lasagabaster, 2019), usually but not solely at school level (See Section 1.4.1). These mainly included the hard sciences (58%) such as physics (16%), mathematics (14%), biology (10%) and natural science (10%). The trend is also confirmed by the Eurydice report (2006), which claimed that science and social science are the most frequent subjects offered in English at school level. The rest of the respondents studied in one single language (48%) and in international schools (2%), where communication takes place in more than one language.

4.2.1.2 Participants' English background

The questions posed in the second part of Q1 aimed at gaining insights into the participants' language background and the self-evaluation of their own English proficiency at the beginning of the term (A.Y. 2019/2020). As emerged from the students' answers, before enrolling in the university programme, most of them had studied English for more than seven years (88%), whereas 10% between five and seven years and just 2% for less than two years. Once enrolled in the medical programme, only 32% claimed they had continued to study and use English autonomously, e.g., through private tutoring, study trips, self-study, reading and

watching TV series. As a consequence, language use predominantly took place on-campus and in contexts familiar to the students.

In terms of English language proficiency, as already stated in the previous chapter (See Section 3.4.1.1), meeting the minimum requirement, set at B2 of the CEFR, guarantees admission to the programme under observation. Indeed, B2 is the most frequently required level of the CEFR (Tatzl and Messnarz, 2013; Harsch et al., 2017; Harsch, 2018; TAEC EMI Handbook, 2019) for entering an EMI programme and considered adequate for achieving successful learning progress (Saarinen and Nikula, 2013). As for Italian students, B2 should be reached by the end of secondary school education (Campagna and Pulcini, 2014), even though this is not always the case (Cicillini, 2021).

In the EMI programme under investigation, the students' language certifications submitted for the admission procedures are usually evaluated by a board of internal members. As far as the submitted certifications are concerned, 64% of the students presented a Cambridge certification⁵⁵, in particular, 52% gave proof of a C1 Advanced (CAE) certification, 33% of a B2 First (FCE), 9% of a C2 Proficiency (CPE) and interestingly 6% submitted a B1 Preliminary (PET). This was a rather unexpected result since the minimum threshold to enter the EMI programme in *Medicine and Surgery* is B2. This may be explained by the fact that the admission policies allow students with language weaknesses to reach the B2 level by attending remedial language courses throughout their first year. Once completed, students have to pass a final exam. Another alternative explanation for that result may be that some students underestimated their language proficiency because they tended to aspire to the native varieties of English. As Aiello (2017) argued, "native English" continues to be the benchmark against which competence can be measured. The remaining participants submitted either the IELTS (27%) or the TOEFL (8%) certifications. One student only was a native speaker of English and did not need to provide any language certification but only the school records of education in the UK.

⁵⁵ Cambridge certifications and qualifications are offered worldwide and managed by a team of experts from the University of Cambridge. They are used to certify the candidates' English proficiency at different levels, from school to higher education and business. Retrieved from: <https://www.cambridgeenglish.org/>
Last access: 29/09/2021

In Q1, the participants were asked to self-evaluate their overall Italian and English level at the beginning of the term and their English skills according to the CEFR scale. As regards the Italian language, 70% of the students were Italian native speakers whereas 19% were basic (A1-A2) and 6% independent users (B1-B2). This may be attributed to the absence of explicit Italian language entry requirements for international students, as can be read in the annual report (Scheda SUA) available on the university webpage. Since this is an English-mediated programme, speaking Italian is not a requisite albeit it may be helpful for the students' daily life and personal contacts, especially in a country like Italy where the general levels of English proficiency are not very high compared to the rest of Europe (EF English Proficiency Index, 2021). In the EMI programme under investigation, international students are offered two courses taught during the first and third year in order to help them to improve their Italian proficiency.

As regards the English language, given that B2 was the minimum level to enter the programme, almost half of the respondents claimed they had a higher level, i.e., C1, followed by 33% with a B2 and 13% with a C2, corresponding to the highest level of the CEFR scale, as presented in Figure 10 below. In addition, as also observed in question 11 (Q1-11), which focused on the students' language certifications, 5% of them confirmed they had a B1, which does not meet the minimum threshold set to enter the programme.

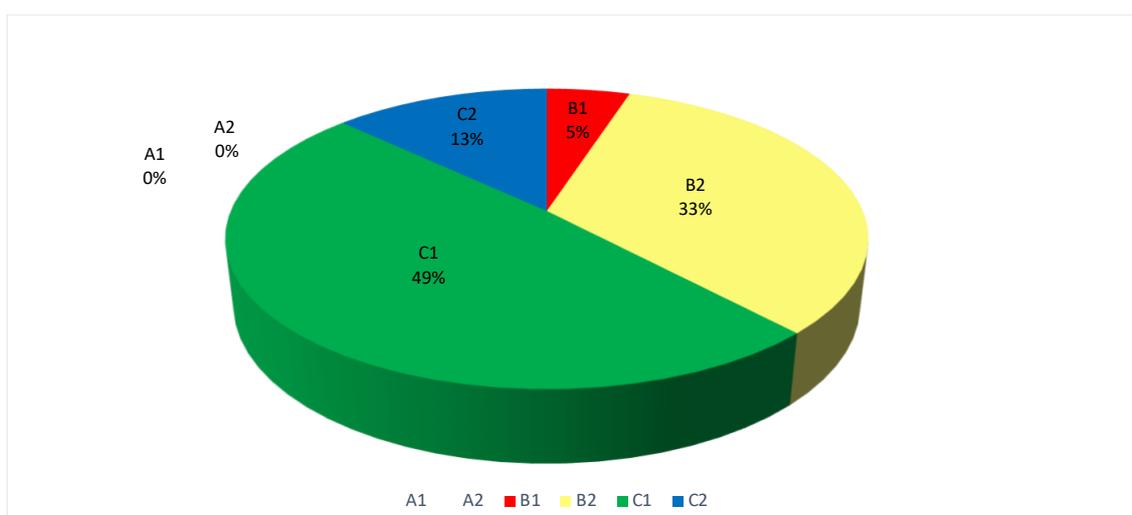


Figure 10 Self-evaluation of the students' English proficiency according to the CEFR descriptors (Q1-11)

As also argued by some EMI scholars (Kim et al., 2014; Chapple; 2015; Clark, 2017; Costa and Mariotti, 2020), the comparison between international and local students showed that the former felt much more competent and confident when it came to self-evaluating their overall proficiency. As shown in Figure 11, the percentages display that international student have higher levels of English proficiency, ranging from C1 (38%) to C2 (31%). Italian students, instead, rated themselves slightly lower, mostly at C1 (56%) and B2 (38%).

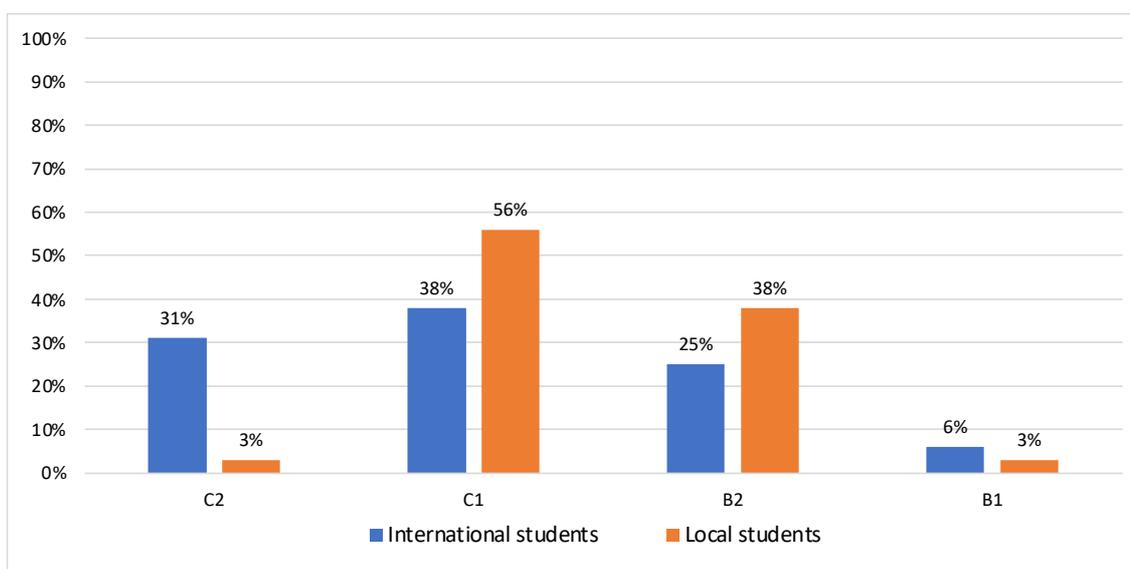


Figure 11 Self-evaluation of English proficiency– Comparison between international and Italian students

In question 10 (Q1-10) instead, the respondents (89) self-evaluated each language skill: listening, reading, spoken and written interaction and production were rated according to the CEFR scale. Table 14 shows a breakdown of the responses.

Scale	Listening		Reading		Spoken Interaction		Written Interaction		Spoken Production		Written Production	
	N	%	N	%	N	%	N	%	N	%	N	%
C2	21	24%	18	20%	8	9%	14	16%	7	8%	10	11%
C1	40	45%	40	45%	35	39%	22	25%	31	35%	20	23%
B2	23	26%	25	28%	37	42%	47	53%	41	46%	47	53%
B1	3	3%	6	7%	7	8%	3	3%	9	10%	10	11%
A2	2	2%	-	-	2	2%	3	3%	1	1%	2	2%
A1	-	-	-	-	-	-	-	-	-	-	-	-

Table 14 Students' self-evaluation of their own English skills according to the CEFR scale (Q1-10)

N=89

Each column shows the number and percentage of students for each skill. One option only could be chosen for each skill.

Table 14 shows that the students' receptive skills – listening and reading – are stronger than the productive and interactional ones and this regards both Italian and international students. In particular, 45% self-evaluated their listening as C1, 26% as B2 and 24% as C2. Similarly, over half of the students (45%) claimed they had a C1 level in their reading skills, followed by B2 (28%) and C2 (20%). A lower difference between C1 and B2 can be observed in spoken interaction where 42% of the students claimed they had a B2 and 39% a C1 level. Instead, as regards written interaction, more than half of the respondents (53%) claimed they had a B2, followed by C1 (25%) and C2 (16%). In terms of spoken production, 46% were at B2 while 35% were at C1; similarly, more than 50% had a B2 in their written production skills, followed by 23% who had a C1. Interestingly and similarly to questions 10 and 11 (Q1-10,11), some students reported a B1 and even an A1 in certain skills concerning written production (11% were B1) and written interaction (3% were A2). Overall, these data showed that while most of the students had strong confidence in their English proficiency, especially in their receptive skills, production and interaction were rated slightly lower, particularly writing skills. It also emerged that while more than half of the students reported a higher language level than the expected B2, others rated themselves lower than the minimum entry requirement set, even if to a lesser extent.

4.2.1.3 Motivations and expectations at the beginning of the 1st year

With the purpose of gaining a thorough understanding of the group of students observed, a question in the third section of Q1 focused on the students' motivations for choosing English-mediated education. Table 15 below provides an overview of their answers:

Q1-15 Why did you decide to study in English?	
Motivations	%
Because English is the international language	79%
Have more job opportunities in the future	76%
Work abroad in the future	70%
Continue my studies abroad	68%
Meet international students	64%
Improve my English skills	63%
Have easier access to international publications	60%
Other:	
Entering medicine programmes in English is easier	1%
I was accepted in the English programme only	1%

Table 15 Main motivations provided by the respondents for studying in English (Q1-15)

Percentages of students' motivations are shown. All the options could be chosen.

What stands out in Table 15 is that a very high percentage (79%) of students decided to study in English because of its value as an international language. Before enrolling, students probably thought about their future, in terms of both education and work, and their academic learning progress. In fact, opting for English-mediated education is perceived as a gateway to have more job opportunities (76%) in the future, also abroad (70%) and to possibly to continue their educational pathway in a different country (68%). Moreover, studying through English is perceived as beneficial to establish international relationships with classmates (64%), improve their English proficiency (63%) and gain easier access to international publications and studying material, more likely to be written in English. This also confirms the assumption that English has become the predominant language in scientific periodicals and books (Macaro, 2015;

Lasagabaster, 2015; Galloway, 2017). Just two respondents left two open comments where they made an indirect comparison with the Italian-mediated medical programme, available at the *University of Torino*. In fact, according to their answers, access to the medical programme in English is perceived as easier, probably because of the lower number of candidates. This is confirmed by the most recent data about the *Medicine and Surgery*'s admission procedures for the A.Y. 2021/2022⁵⁶. In fact, with roughly 14,000 places available throughout the country, approximately 63,000 candidates applied for an Italian medical programme while 13,000 did for the English ones.

The third section of Q1 also focused on the students' expectations of their lecturers' language proficiency (Q1-16) and their personal English improvement (Q1-17) during their academic studies. Q1-16 showed that they expected highly proficient lecturers, with over half of them (56%) indicating C2 and C1 of the CEFR and 30% B2 and B1 as the most appropriate language levels for their lecturers; 14% instead would expect English native speakers, even though this is somewhat rare in Italian academic institutions (Clark, 2018). According to the literature on EMI, there seems to be a lack of consensus among the numerous universities offering EMI courses throughout the world as to what the minimum and more appropriate level of English proficiency the teaching staff should have. Nevertheless, the lecturers' English proficiency mostly ranges from C1 to B2 of the CEFR (Halbach and Lázaro, 2015; O'Dowd, 2018; Dafouz-Milne, 2018).

Starting from the assumption that in the EMI context neither explicit language teaching takes place nor are language outcomes expected, question 17 (Q1-17) was focused on the students' expectations about the improvement of their English skills during their academic studies. In particular, they were asked whether or not they expected their English proficiency to improve during their studies. As shown in Figure 12, roughly 60% answered positively while the remaining did not know (22%) or answered negatively (20%). This finding is consistent with previous

⁵⁶ Data retrieved from the online news,

Rai News https://www.rainews.it/dl/rainews/articoli/universita-al-via-tutta-italia-test-ingresso-medicina-76mila-candidati-4d5917f5-b785-4d71-89f0-3ea8af675553.html?refresh_ce
and *Il Sole 24 Ore* https://www.ilsole24ore.com/art/test-medicina-due-anni-21percento-posti-piu-2021-ballo-14020-ingressi-AECbi9T?refresh_ce=1

Last access: 04/10/2021

studies, confirming that students expected their English to improve during their academic career and that language improvement is one of the most common motivating factors to opt for an EMI course (Tatzl, 2011; Rogier, 2012; Costa and Coleman, 2013; Lei and Hu, 2014; Ackerley, 2017; Costa and Mariotti, 2017; Drljača Margić and Vodopija-Krstanović, 2017; Dearden, 2018; Galloway and Ruegg, 2020).

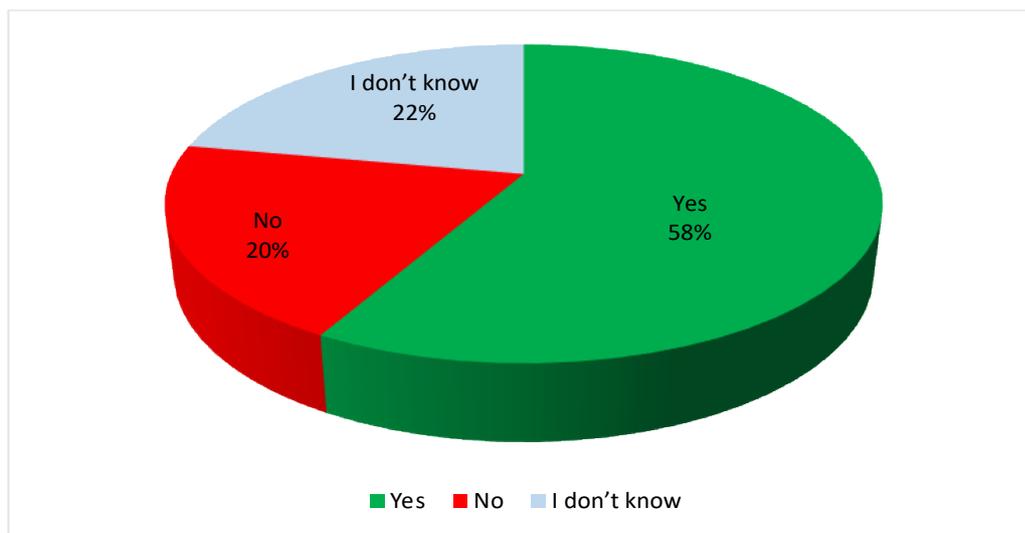


Figure 12 Students' expectations of their English language improvement (Q1-17)

The pie chart displays the distribution of answers to the following question: "Do you expect your English proficiency to improve?"

Nevertheless, the findings showed that most of the international students (59%) did not expect their language proficiency to improve compared to the Italian candidates (69%) who answered the same question positively.

4.2.1.4 Students' experience in EMI

As already mentioned before, Q1 focused on the students' background, expectations and perceptions at the beginning of their first year in the EMI programme. Consequently, the answers portrayed the initial impressions of a class of students after a month of academic career in an English-taught programme. In order to gain a thorough understanding of the students' experience and to observe

their perceptions and reactions in the first year, Q2 was sent at the end of the same year (A.Y. 2019/2020), to which 70 students out of 100 responded.

The findings retrieved from Q1-18, 19 showed that at the beginning of the first year, English was generally used more frequently than Italian in class, both in student-lecturer (76%) and student-student (38%) interactions. Instead, in informal conversations among peers, they code switched between English and Italian much more frequently (60%) probably because of the context, the different relationships, and the higher degree of ease among classmates. As emerged from Q2-9, 10, at the end of the year, the participants' language habits had slightly changed: the use of English in class increased both in student-lecturer (96%) and student-student (64%) interactions. Instead, the switch from English to Italian decreased significantly, both with classmates (from 60% to 17%) and lecturers (from 24% to 3%).

Table 16 presents the results obtained from question 20 (Q1-20) about the degree of difficulty of specific activities, according to a five-point Likert scale ranging from 1=very difficult to 5=very easy. 89 students answered question 20. What stands out from the table is that the activities proposed were mostly considered by the students as either *very easy* or *easy*. Interacting with classmates (52%) is seen as the easiest activity at university, followed by other *very easy* tasks such as taking notes (39%) and understanding specialized vocabulary (38%). Following an EMI class (35%), reading course material in English (44%) and interacting with lecturers (39%) were rated as *easy* activities. The highest frequencies of answers regarding *neutral* tasks included comprehension of specialized vocabulary (30%), reading books and educational resources, and following lessons in English (29%). Nevertheless, 14% thought that coping with specialized vocabulary in English was a (*very*) *difficult* task. All in all, the findings showed that at the beginning of the term, students felt comfortable in studying medicine through the medium of English and in performing certain tasks such as interacting with other students, learning specialized vocabulary and taking notes. While much research has shown that writing is one of the most challenging activities to do in an EMI class together with other productive skills (Kırkgöz, 2005; Sert, 2008; Hellekjær, 2010; Evans and Morrison, 2011; Kamaşak, Sahan and Rose, 2020), the students' answers regarding the easiness of taking notes may be

explained by the fact that notes are usually kept as private writing and are not generally assessed.

Q1-20 According to your experience, how easy (5) or difficult (1) are the following tasks?						
<u>Tasks</u>	Follow an EMI class		Take notes in ENG		Read course material in ENG	
Values	N	%	N	%	N	%
very easy	24	27%	35	39%	13	15%
easy	31	35%	27	30%	39	44%
neutral	26	29%	19	22%	25	28%
difficult	8	9%	3	3%	10	11%
very difficult	-	-	5	6%	2	2%
Total	89		89		89	
Mean	3.97		3.94		3.57	

<u>Tasks</u>	Interact with lecturers in ENG		Interact with classmates in ENG		Understand specialized vocabulary in ENG	
Values	N	%	N	%	N	%
very easy	27	30%	46	52%	34	38%
easy	35	39%	30	34%	16	18%
neutral	16	19%	8	9%	26	30%
difficult	9	10%	3	3%	11	12%
very difficult	2	2%	2	2%	2	2%
Total	89		89		89	
Mean	3.97		3.94		3.57	

Table 16 Degree of difficulty of specific tasks (Q1-20)

N=89

The columns display six common activities performed in class. The number and percentage of students' answers are shown according to a five-point Likert scale ranging from very easy to very difficult. One option only could be chosen for each activity.

The same question was asked in Q2 (Q2-21), sent to the students at the end of the first year. This time, 70 out of 98 students filled in questionnaire two. The findings presented in Table 17 shows that following an EMI class (43%), taking notes in English (43%) and interacting with classmates (43%) and lecturers (42%) in English were considered as *easy* tasks by the students (43%). Instead, reading course material (44%) and understanding specialized vocabulary (43%) in English

were perceived as *neutral* tasks to perform. No student ever selected the option of *very difficult* for any activity proposed.

Q2-21 According to your experience, how easy (5) or difficult (1) are the following tasks?						
<u>Tasks</u>	Follow an EMI class		Take notes in ENG		Read course material in ENG	
Values	N	%	N	%	N	%
very easy	14	20%	14	20%	9	13%
easy	30	43%	30	43%	18	26%
neutral	24	34%	22	31%	31	44%
difficult	2	3%	4	6%	12	17%
very difficult	-	-	-	-	-	-
Total	70		70		70	
Mean	3.8		3.77		3.34	

<u>Tasks</u>	Interact with lecturers in ENG		Interact with classmates in ENG		Understand specialized vocabulary in ENG	
Values	N	%	N	%	N	%
very easy	10	14%	16	23%	16	23%
easy	29	42%	30	43%	20	28%
neutral	26	37%	22	31%	30	43%
difficult	5	7%	2	3%	4	6%
very difficult	-	-	-	-	-	-
Total	70		70		70	
Mean	3.62		3.85		3.68	

Table 17 Degree of difficulty of specific tasks (Q2-21)

(N=70)

The columns display six common activities performed in class. The number and percentage of students' answers are shown according to a five-point Likert scale ranging from very easy to very difficult. One option only could be chosen for each activity.

The comparison between the students' answers, at the beginning and at the end of the first year, shows some differences in the time frame observed. While in Q1 most of the respondents thought that taking notes (39%), interacting with classmates (52%) and understanding the specialized vocabulary (38%) in English were *very easy* tasks, the degree of confidence perceived by the students in those tasks decreased after a year of practice. In fact, in Q2 those activities were not rated as *very easy* anymore but as *easy* (writing and peer interaction) and *neutral*

(specialized vocabulary comprehension) by most of them (See Figure 13). Moreover, option 3 (*neutral*) increased in Q2 for all the tasks proposed.

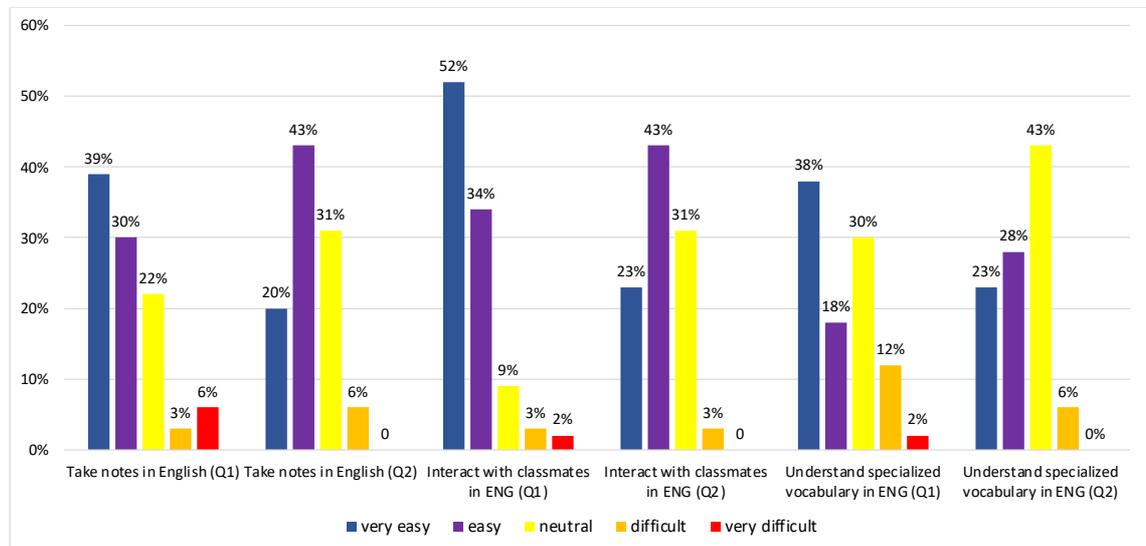


Figure 13 Degree of difficulty of specific tasks (1) – comparison between the first and the second questionnaire (Q1-20 and Q2-21)

Three common activities performed in class are shown in this figure. Likert-scale options, ranging from very easy to difficult, are displayed on the X-axis. The percentage of answers is shown on the Y-axis.

As shown in Figure 14, the degree of difficulty perceived when reading the course material in English varied during the year. It decreased from *easy* (44%) in Q1 to *neutral* (44%) in Q2. Moreover, the option 2 (*difficult*) increased in Q2 from 11% to 17%, meaning that some students perceived that activity more difficult than at the beginning of the year. By contrast, following EMI classes and interacting with lecturers in English were considered by the majority as *easy* tasks, both in Q1 and Q2, even though option 5 (*very easy*) decreased in favour of *neutral*.

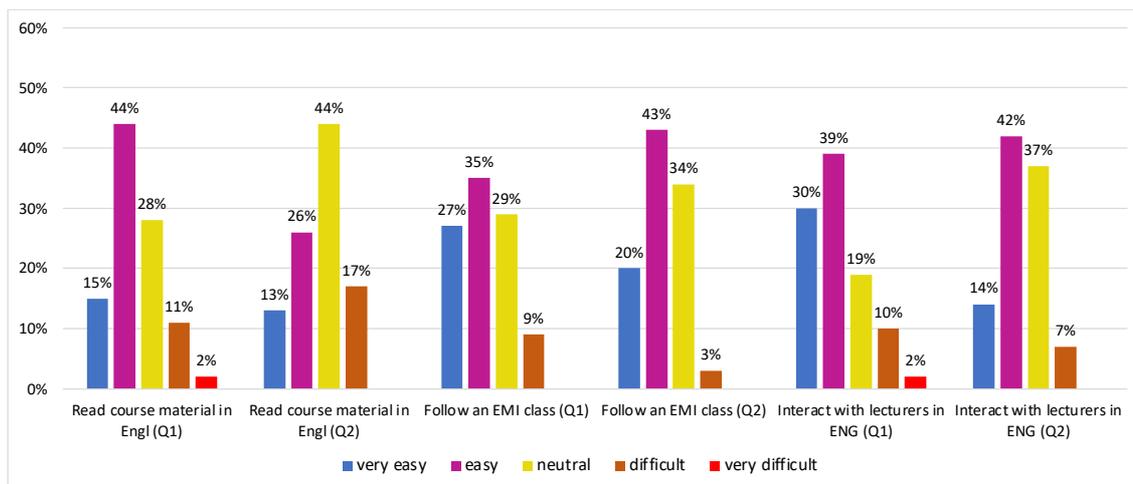


Figure 14 Degree of difficulty of specific tasks (2) – comparison between the first and the second questionnaire (Q1-20 and Q2-21)

Three common activities performed in class are shown in this figure. Likert-scale options, ranging from very easy to difficult, are displayed on the X-axis. The percentage of answers is shown on the Y-axis.

Overall, the results showed that the students’ perceptions changed slightly during the first year as regards the degree of difficulty of specific activities. At the beginning of the year most of them felt comfortable in performing certain tasks in English, while their points of view changed during the time monitored, probably because of the increased practice and awareness. They may have also underestimated the impact of English as the instructional language in the performance of certain tasks. Nevertheless, when they were asked the question Q2-4, “According to your experience, was it difficult to learn medical subjects in English?”, 60% replied negatively and left some open comments to justify their answers:

“I’ve been studying English my whole life, so it’s as if it was my primary language”.

“English was my previous language of study”.

“I have no problems with the language”.

While some respondents felt quite comfortable with English as the medium of instruction, others thought that studying through another language was difficult at first but after a while they familiarized themselves with it, as stated below:

“In a couple of weeks, you get used to it and it is natural to attend lectures in a language different from your mother tongue”.

“It was quite hard at the beginning but then it became a habit”.

By contrast, 40% stated that learning medical subjects in English was difficult for two main reasons, according to their open comments: (1) because of the low levels of the lecturers’ English proficiency which caused limited understanding and learning, and (2) owing to the coronavirus pandemic, which began during the second term of the students’ first year and made classes less flexible and organized. As regards the lecturers’ language competence, some respondents stated that:

“Teachers had certainly more troubles than me with the language”.

“Some professors should have a better English knowledge and slightly higher speaking skills”.

“English was not a problem, except for those classes where the professor was not clear in pronunciation or exposition”.

“I always find myself googling simple things from the lectures because they are not clearly stated”.

The issue of low English proficiency, long debated in the EMI literature (Coleman, 2006; Dafouz-Milne, 2007; Costa and Coleman, 2013; Pulcini, 2015; Drljača Margić and Vodopija-Krstanović, 2017; Clark and Guarda, 2018), also emerged from other questions, as from those exploring the quality of interaction in class both with lecturers and classmates. Questions 19 and 20 (Q2-19,20) focused on the students’ perceptions on a five-point Likert scale, ranging from 1=very poor to 5=excellent, as presented in Table 18 below.

Q2-19 How is the quality of interaction with your lecturers? (70 answers)

Excellent		Very good		Fair		Poor		Very poor		Mean
N	%	N	%	N	%	N	%	N	%	
4	6%	35	50%	28	40%	2	3%	1	1%	3,55

Table 18 Quality of interaction with lecturers (Q2-19)

N=70

Data are shown according to a five-point Likert scale from excellent to very poor.

The frequency of response to question 19 (Q2-19) indicates that the quality of interaction between students and lectures was relatively satisfactory, mainly *very good* (50%) and *fair* (40%) (Table 18) despite the comments left voluntarily by the students in which they complained about the limited language skills of some lecturers:

“Some professors don't speak English perfectly”.

“Overall, it depends a lot on the professor's English skills”.

“It would be great if some professors could speak English a bit more fluently, or in some cases a lot more fluently”.

Others instead found alternative ways to cope with the language barriers and to facilitate interaction, for instance by controlling the voice speed, rephrasing, and repeating questions.

“With speaking slowly or rephrasing, usually communication is okay because professors try to get us involved”.

“Some professors had a more accented pronunciation when speaking in English, which sometimes diffculted the comprehension of some words. However, I didn't feel my learning abilities were affected by that. We tried to do our best”.

“I didn't interact with my lecturers a lot, but they were always available to repeat”.

Similarly, the quality of interaction among classmates (Table 19) was mostly considered as *very good* (52%) but according to their responses it was not influenced by English. Most of them seemed to be satisfied and pleased to have international classmates and to switch between English and Italian when necessary.

“Most of my friends are Italian but have a good level of English which makes interaction easy. The ones that are not so proficient, I try to bridge the gaps with my poor Italian”.

“At the very first beginning we would only speak in English. At the moment, since I'm already able to understand a little bit of Italian, they try to speak with me in Italian and I try my best to keep up with them, (although the majority of times the conversation is in English)”.

“It's an amazing opportunity getting to know people with different backgrounds and culture”.

Q2-20 How is the quality of interaction with your classmates? (70 answers)

Excellent		Very good		Fair		Poor		Very poor		Mean
N	%	N	%	N	%	N	%	N	%	
10	14%	36	52%	19	27%	2	3%	3	4%	3,68

Table 19 Quality of interaction with classmates (Q2-20)

N=70

Data are shown according to a five-point Likert scale from excellent to very poor.

Additional concern was also expressed about the coronavirus pandemic, during which classes suddenly shifted from the face-to-face modality to online. In fact, due to those unexpected circumstances, the stakeholders involved in the educational field had to become familiar with digital education and virtual classrooms (Cicillini and Giacosa, 2020c). Despite the effort made by the entire educational system worldwide to offer alternative ways of delivering disciplinary content and sharing knowledge, several issues emerged as also observed in the students' answers to Q2. In the respondents' view, the quality of communication and interaction was negatively influenced by the online modality, paving the way to misunderstandings, reduced involvement and motivation, and therefore less effective lessons. This contributed to a much more difficult learning experience and lower interaction, as the respondents confirmed in Q2-4, 19, 20 in their open comments:

"I didn't interact much because of online teaching".

"The last semester has been difficult to say the least, some subjects are extremely hard to follow online".

"The first semester was great, I enjoyed it a lot. Regarding the second, online lessons complicate a lot of things, for students and professors, and because of that, the quality of education decreased a little".

"Not going to actual lectures lowers my motivation. I spent half of the year at home and away from the university, because of the pandemic".

"The COVID-19 pandemic made everything less stimulating and a way less practical".

This problem was brought up again in question 22 (Q2-22), in which more than half of the students (60%) confirmed that the coronavirus emergency negatively affected their learning progress (Table 20).

Q2-22 In your opinion, has the coronavirus emergency negatively affected your learning progress?		
Response	Response total	%
Yes	42	60%
Partially	19	27%
No	9	13%

Table 20 The effects of the coronavirus emergency (2020) on the students' learning progress (Q2-22)

N=70

In the open comments added by the students, the recurrent complaints mostly regarded the loss of human contacts, motivational support, meaningful interaction, and clear communication. Some lamented the feeling of loneliness felt during the semester as they could not meet in person and ask for help and support, others missed the opportunity to communicate and improve their English skills, because the opportunities to engage in interaction online were more limited than in face-to-face. Below some examples are reported:

"It was a pity not being able to receive a direct support and psychological/motivational help from my friends at uni".

"I didn't have the opportunity to interact with my classmates and improve my speaking skills".

"Corona made it harder because we couldn't follow in presence, and we lost the interaction and collaboration with colleagues and prof".

"Overall, the last semester has been awful. It was really hard to follow the lessons, to understand everything, to get in touch. Moreover, I was alone during most of the semester, and the loneliness really affected negatively my productivity and motivation".

In addition, Q2-23 confirmed much of what the respondents had already said in the previous questions and highlighted additional discomfort, as shown in Figure 15.

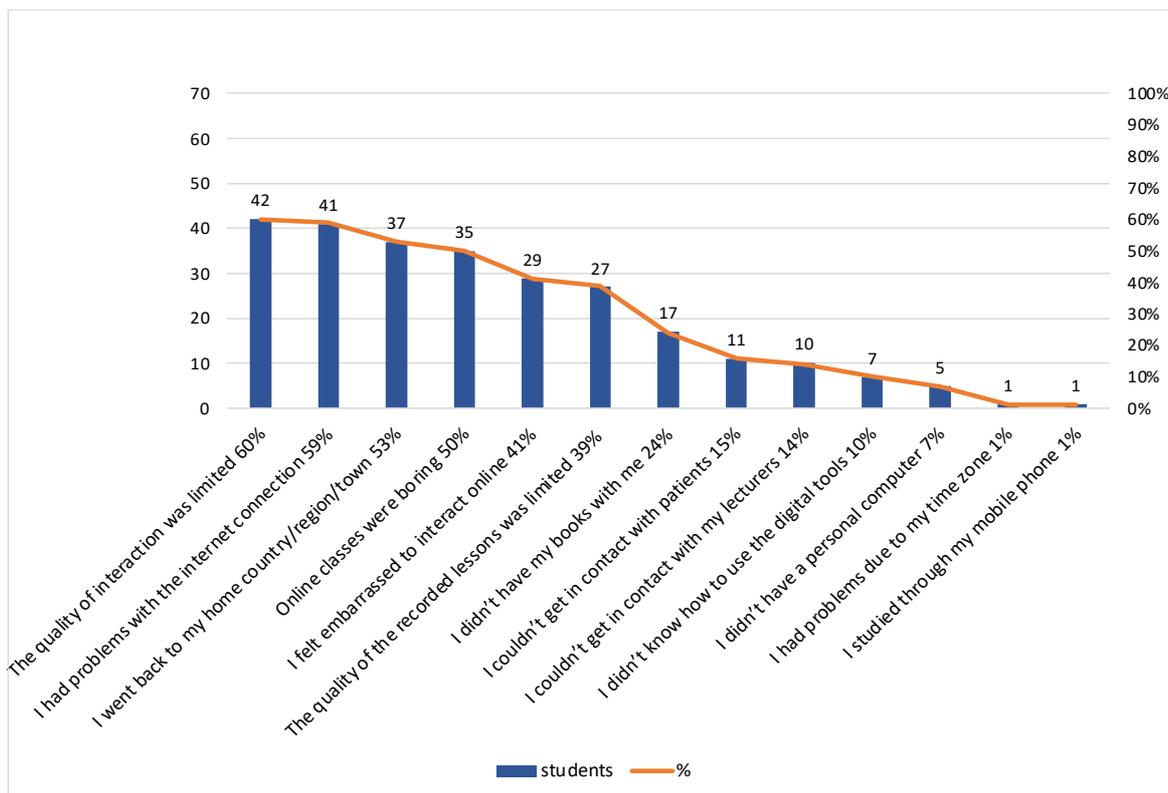


Figure 15 Issues due to the coronavirus outbreak (2020) (Q2-23)

Percentages of students' answers are shown together with the number of students out of 70. All the options could be chosen.

Among the additional problems related to distance teaching, students mentioned technical issues such as poor internet connection (59%), low quality of recorded material available online (39%) and limited digital literacy (10%). More than half of the students (53%) had to go back to their home countries or cities where some did not have either books (24%) or personal computers (7%). In addition, 41% argued that they felt embarrassed to communicate online, probably because they were not used to it.

"It is very unnatural to study and interact online without seeing the prof".

"The most difficult part is coping with the recordings which many times have the worst audio quality".

"I had a very bad connection at home and so I used my phone all the time, which was not easy, especially for power points and chats".

Instead, while 13% thought that the pandemic did not influence their learning, 27% identified both pros and cons of online modality; in fact, staying at home and

attending online classes meant not commuting but saving time for studying, having the opportunity of playing video-recordings multiple times, taking notes more accurately and overall having greater flexibility. Among the cons, limited interaction, communication and practical sessions, lack of enthusiasm and social contact were the most cited.

“With recorded lessons I can optimize the time and I do not waste it travelling, I can do breaks”.

“I have more time to write and correct my notes”.

“While I appreciate the flexibility that online classes have provided, the lack of real schedule, social interaction, practical lessons and dialogue with the professors has significantly affected the present and past year of university”.

“We have many lecturers using different online platforms so it is not at all clear where the course material is. Lack of communication between staff and students”.

Another challenge identified by the informants regarded exams (Q2-14). The EMI degree programme in *Medicine and Surgery* offers a wide range of exams during the academic years, predominantly written and , to be taken in English. However, due to the shift to online teaching, exams were adapted to the unusual circumstances and available tools, changing into oral or written exams with no practical assessment. Moreover, students complained that during the pandemic some exams were made even more difficult by adding extra oral tests.

“Online exams are very different respect to the normal one, no practical exams online”.

“Corona changed the exams’ modality which made the exams harder to pass. (Written turned into oral)”.

“After covid we almost always have an oral part in our exams”.

Notwithstanding the difficulties experienced during the outbreak, 45% reached the 60 credits set for each academic year by passing both exams and practical activities. 55% instead did not reach that number of credits but were admitted to the second year anyway, as confirmed by the institutional guidelines available online ⁵⁷.

⁵⁷ https://www.medinto.unito.it/do/home.pl/View?doc=Career_plan.html#submenu

Last access: 09/08/2021

4.2.1.5 Perceptions of language improvement (first year)

As already mentioned in the previous chapters, in the EMI context, English is not treated as a disciplinary subject but as a tool to teach and promote academic disciplinary literacy. In this vein, lecturers are not interested in the students' language skills, nor do they contribute to their development (Macaro, 2018; Pecorari and Malmström, 2018). Nonetheless, language improvement is one of the main drivers to opt for English-mediated education and a desired outcome for some (Ackerley, 2017; Galloway and Ruegg, 2020). Considering the long exposure to the language, it has been hypothesized that some degree of incidental learning may take place in EMI classes, without explicit instruction and learning (Costa, 2016; Aguilar, 2017; Macaro et al. 2018). In light of the potential effects that EMI may have on the students' skills, this research tries to shed light on the medical students' English proficiency, through their impressions (See Sections 4.2.1 and 4.3.1) and language outcomes in T1 and T2, during the two academic years observed (Sections 4.2.2 and 4.3.2).

At the end of the first year, they were asked whether or not their English proficiency had improved (Q2-5). 46% were not aware of their language progress while 28% thought that they had improved and 26% that they had not (Table 21).

Q2-5 Have your English skills improved?		
Response	Response total	%
I don't know	32	46%
Yes	20	28%
No	18	26%

Table 21 Students' perception of their English language improvement (Q2-5)

N=70

The results may be influenced by the fact that in EMI classes little or no attention is usually paid to English, which is used just for instructional purposes; indeed, the main goal of such classes is to enhance the students' knowledge in specialized fields through the medium of English. In the medical programme observed, relatively limited formal training in English is offered to the learners by means of a language

course taught at the beginning of the term. Notwithstanding this, almost half of them were not sure whether or not their English skills had improved and to what extent the language course had influenced their learning pathway.

To obtain a clearer picture of their language development, students were also asked which abilities had mostly improved (Q2-6) and were invited to justify their answers.

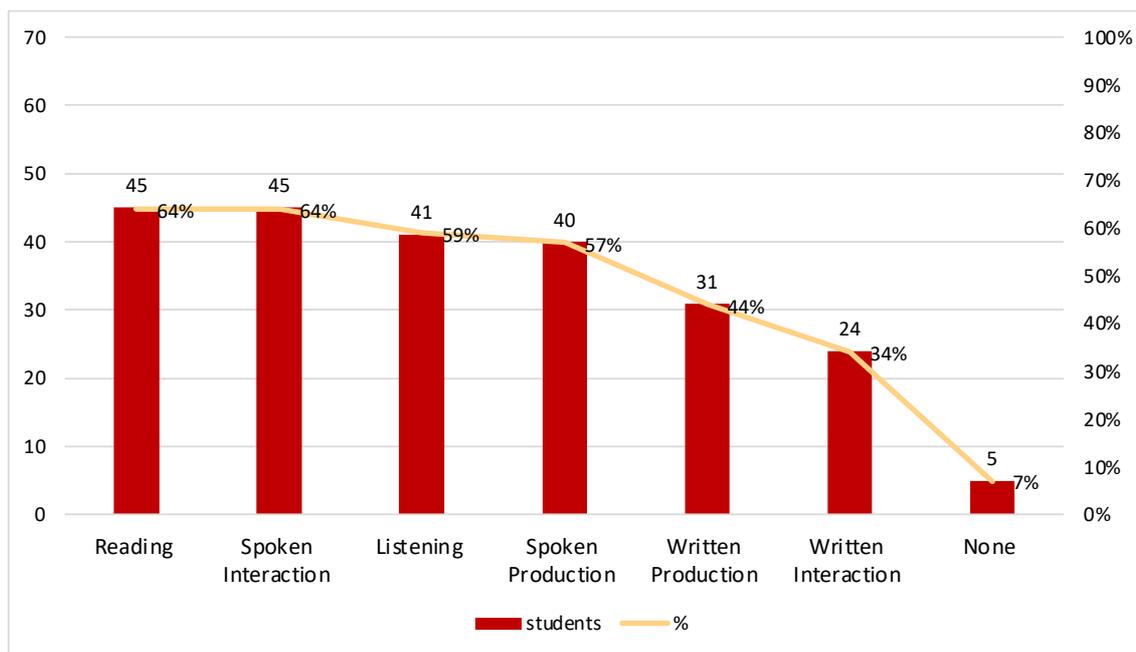


Figure 16 Students' self-evaluation of their own language improvement (Q2-6)

Language skills are shown on the X-axis while the number and percentage of answers on the Y-axis.

The chart in figure 16 indicates that reading (64%) and spoken interaction (64%) were the skills that mostly improved during the first year. According to their comments, this was facilitated by the multilingual environment where they studied, in which they were encouraged to communicate in English. In addition, since the course material and the books were available only in English, they could also practice their reading skills.

“I met many foreign students and I needed to talk with them and listen to them”.

“Being in an international degree, I cannot speak in my mother tongue with other students, thus I think that it helped me a lot”.

“Reading scientific literature has improved my skills and comprehension for the subject”.

“I improved because I prepared my exams”.

Listening (59%) and spoken production (57%) were also practiced, as the respondents regularly attended classes and listened to the lecturers, asked questions, and interacted with their peers.

“Outside the school, I never speak English because there is no need for that. So, in the school, I have opportunity to practice my speaking”.

“We spend a lot of time in class listening to profs. This probably helped me improve my English”.

“I have improved in all skills, both during interactions with my colleagues and during interaction with the professors”.

Although the writing skills were rated lower, written production (44%) and interaction (34%) increased too, as also confirmed by some comments.

“My written production may have also improved due to essay assignments”.

“Regarding the written skills, I was not used to send emails in English, or write essays, so it helped me improve these too”.

Overall, according to the students’ feedback, some degree of language improvement took place during the first year, even though some respondents were not aware of it. Just 5% did not perceive any improvement. By cross checking the data, it emerged that those who chose “none” in Q2-6 were all international students with C1 and C2 levels of English proficiency. Then, it may be hypothesized that exposure to a certain level of English strengthened their language competence but did not expand their knowledge. Students with already advanced competence did not feel that their competence improved.

4.2.1.6 Satisfaction and expectations at the end of the 1st year

Questions 1, 2 and 3 (Q2-1, 2, 3) focused on the students’ degree of satisfaction of their learning experience during the A.Y. 2019/2020. Over half (49%) of the respondents were *moderately satisfied* (Table 22) followed by 34% who were *very satisfied*. The quality of education (Table 23) was *very satisfactory*

(57%) and overall, their expectations were totally (49%) and partially (45%) met during the year.

Q2-1 How satisfied are you with your first academic year (2019/2020)?

Ext. satisfied		Very satisfied		Mod. satisfied		Slightly satisfied		Not satisfied at all		Mean
N	%	N	%	N	%	N	%	N	%	
4	6%	24	34%	34	49%	8	11%	-	-	3,34

Table 22 Degree of satisfaction according to a five-point Likert scale (first academic year) (Q2-1)

N=70

Data are shown according to a five-point Likert scale from extremely satisfied to not satisfied at all.

Q2-3 How satisfied are you with the quality of education?

Ext. satisfied		Very satisfied		Mod. satisfied		Slightly satisfied		Not satisfied at all		Mean
N	%	N	%	N	%	N	%	N	%	
4	6%	40	57%	22	32%	3	4%	1	1%	3,70

Table 23 Degree of satisfaction according to a five-point Likert scale (quality of education) (Q2-3)

N=70

Data are shown according to a five-point Likert scale from extremely satisfied to not satisfied at all.

Additional comments were also recorded in the open space left after each question, from which mixed feelings and attitudes emerged. Generally speaking, the respondents were more satisfied with the first semester, which took place on-campus in the face-to-face modality, compared to the second one, which was entirely delivered online. They felt proud to be part of the medical school and to study medicine in Turin surrounded by both Italian and international classmates. They enjoyed the intercultural environment in which they studied (Q2-17 - 97% answered *yes*), they appreciated the quality of classes, especially in the face-to-face modality because of the environment, the interactive activities and the human contact with classmates, lecturers and patients.

“I enjoyed the interactions with my prof and mates because they were spontaneous and I felt that I could say any doubt coming to my mind”

“Despite how difficult the second semester has been, I am really enjoying this course, and I am satisfied regarding its quality”.

Some negative feedback and complains emerged from their answers too. These mostly regarded the lecturers' English proficiency and the limited communication due to shift from face-to-face to online classes during the pandemic.

"I have been disappointed by the level of English of the professors. Even though they were really committed to their job, and of course they all have a huge and accurate knowledge on the subject they're teaching, sometimes I had the feeling they couldn't explain a concept well because of language issues. (...) A C2 level or at least a C1 should be highly required".

"Lack of lab session and the generally uncertainty and disorder partially due to COVID influenced my views and experience".

Q2 also explored the students' expectations of the following A.Y. 2020/2021 (Q2-24-25), from which multiple viewpoints emerged. Firstly, they expected more attention to formal and informal communication, from both the university itself and the lecturers, through a more effective email interaction and the activation of a newsletter in English, as they suggested.

"Perhaps, an email newsletter informing us of any changes or updates rather than relying on Facebook for information. Any communication sent should also be in English and/or Italian depending on who it is being sent to".

Secondly, according to their responses, the lecturers' English proficiency should deserve more consideration, because in some cases they considered it inadequate for the context and the learners' needs. Some suggested higher language requirements for lecturers and more varied teaching methods. In fact, as shown in Figure 17, students expected their lecturers to have a C1 (66%), a C2 (37%) or even to be English native speakers (30%).

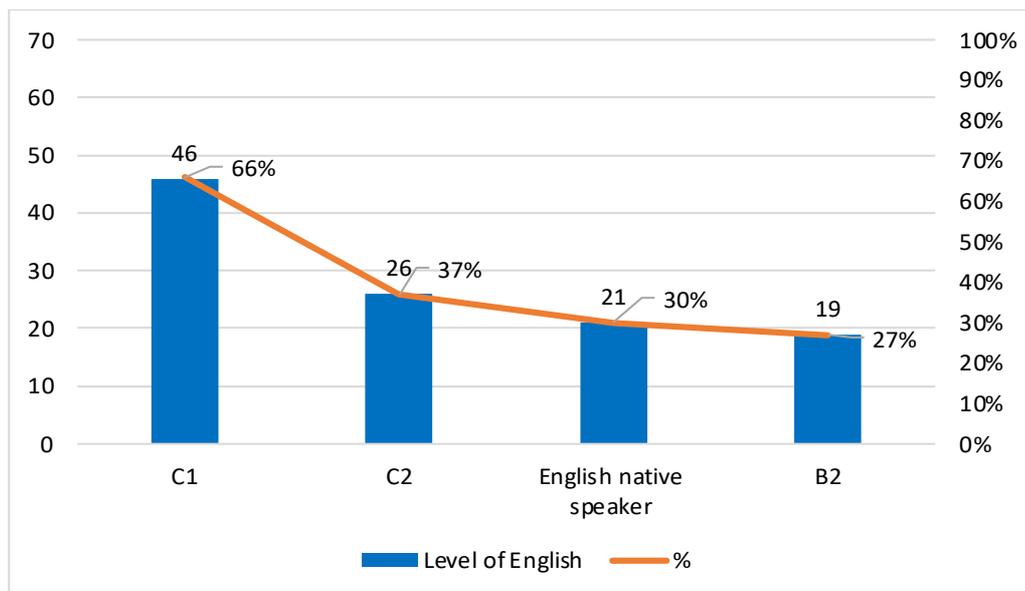


Figure 17 Lecturers' English proficiency expected by the respondents (Q2-11)

This view was corroborated by some open comments:

“In order to improve the quality of education I think it is important to evaluate the English level of professors and allow them to teach (in English classes) only if their level of English is over a set standard”.

“The level of English of the lecturers should be evaluated, as some of them find it hard to articulate and to be understandable in English as it is not their mother tongue and apparently, they are not used to teach in English”.

Lastly, the informants asked for more practical hours and activities in class together with more training sessions during the degree programme, especially in light of the impossibility of accessing labs and doing the first-year internship during the COVID-19 pandemic. In fact, according to their degree course structure, students are required to complete some internships throughout six academic years, which usually consist in training opportunities in different areas of medical specialization.

“I liked all the lectures that were completed but I missed the practical aspect of the trainings. I hope that next year we can have more time for that”.

“I felt sad for not being able to do my internship due to the coronavirus situation (It was something that I was really excited to do!) but hopefully we'll do extra hours next year”.

To sum up, this section presented and analyzed the data retrieved from two questionnaires, the first sent at the beginning of the year and the second at the end

of it. They shed light on the students' motivations to choose a medical degree course in English, which were mainly related to additional professional opportunities in the future, as regards education and work; their attitudes and perceptions of academic life and the learning progress, deeply influenced by the unusual situation experienced during the COVID-19 pandemic and the subsequent shift to online mode; and their expectations of the next academic year, which included more meaningful communication and interaction with the stakeholders involved, attention to language matters and provision of extra practical hours. The next section describes the data gathered from language test one, delivered at the beginning of the first year.

4.2.2 Findings from language test one

The participants were invited to take two language tests: test one (T1) at the beginning of their first year and test two (T2) at the end of their second year. Test one (See Appendix 6) was firstly administered in class, soon after the beginning of their very first academic year but because of the limited response rate (30 out of 100 participants), a second round of tests took place a month later. 17 students completed the test, which was sent online through the Moodle platform, as most of the educational activities had been moved to the online mode because of the pandemic restrictions. Overall, 47 out of 100 first-year students completed T1.

During the first year, two students dropped out of university and consequently the sample was reduced to 98 participants. Since the results of T1 and T2 and their means were compared through the Paired-Samples T Tests in SPSS, it was necessary to select all the students who took both T1 and T2 and exclude from the analysis those who completed only one test. As can be seen in Figure 18 below, among the 98 students enrolled in the programme, 42 (43%) completed both T1 and T2, 5 did (5%) only T1, 8 did only T2 (8%), while the remaining (44%) did not take any test. Consequently, 42 out of 98 enrolled students (43%) were involved in the analysis.

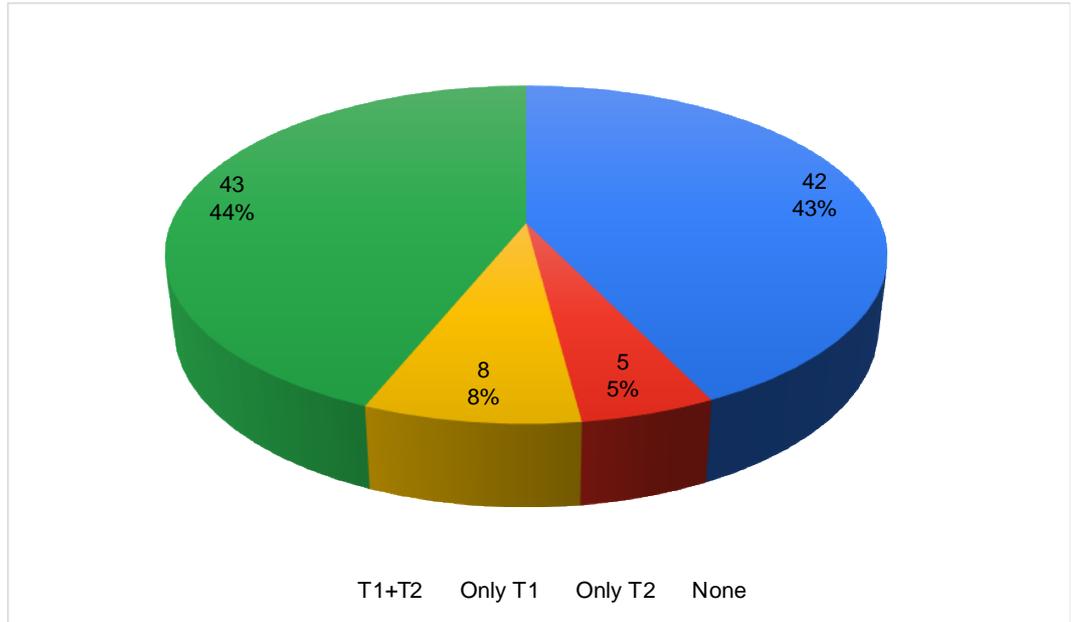


Figure 18 Students' participation in the language tests

N=98

The pie chart shows the number and percentage of students who took both the tests (T1+T2), only T1, only T2 and of those who did not take the tests.

Among these, 12 students were international (28%) and 30 were Italian (72%).

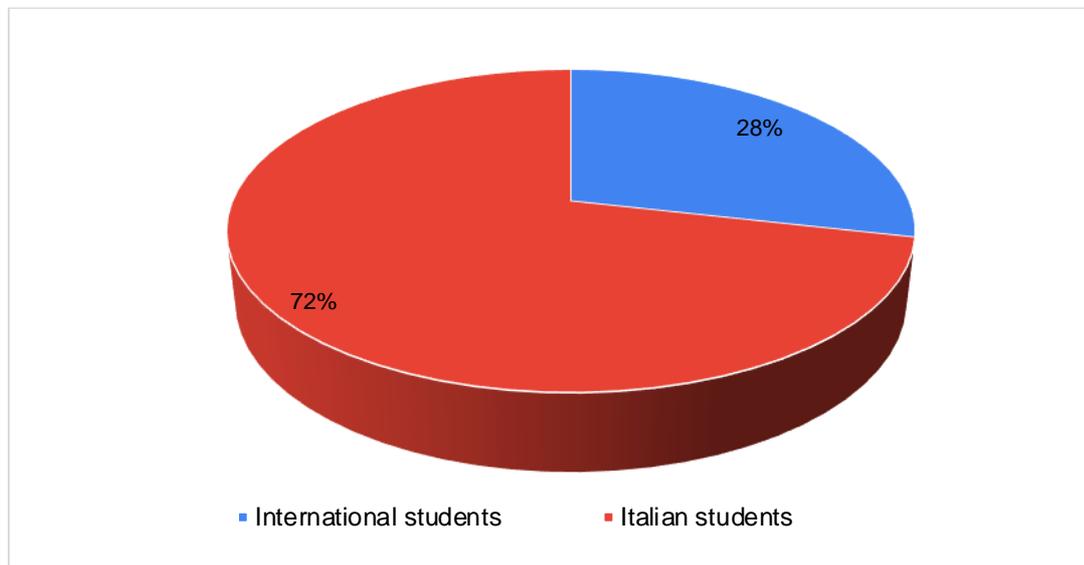


Figure 19 Percentage of international and Italian students who completed T1 and T2

To pass both T1 and T2, students had to reach at least 60% of correct answers, corresponding to 36 out of 60 questions in the two parts of the tests. The minimum scores were 15 correct answers out of 25 in the reading comprehension and 21 out

of 35 in the listening comprehension. Table 24 shows a breakdown of the students' results in T1.

Values	Listening		Reading		Listening + Reading	
	N	%	N	%	N	%
≥ 60%	37	88%	32	76%	36	86%
< 60%	5	12%	10	24%	6	14%

Table 24 Percentage of students' results in T1

N=42

The columns display the number and percentage of students who achieved more or less than 60% of correct answers in the listening and reading parts and in the overall test.

As can be observed in Table 24, in the listening part 88% of the students answered more than 60% of the questions correctly compared to the reading part (76%). Overall, most of the participants (86%) answered correctly to more than 60% of the questions in T1. Figures 19 and 20 show the students' listening and reading scores obtained in T1. The number of students is shown on the X-axis whereas the correct answers given to the test are displayed on the Y-axis. The red bars refer to those students that did not reach at least 60% of correct answers.

What emerges from Table 24 and Figures 19, 20 is that some students did well in the listening part but not in the reading part, and vice versa. The red bars in Figures 19 and 20 show the students' negative scores. For instance, student n. 9 got 33 points in the listening test (light-blue bar) but 14 in the reading (red bar), meaning that he/she passed the listening but not the reading part. Similarly, student n. 23 reached an insufficient score in the listening (13 out 35 – red bar) but worked better in the reading part (16 out of 25 – green bar). Instead, student n. 29 got high points in both the tests, 34 out of 35 in the listening and 19 out of 25 in the reading part. Student n.35 achieved a very high score in the listening (33.5 out of 35) but got 0 points in the reading part. This might be due to an error made in the submission of the online test or in the performance itself as all the questions were left blank. Overall, the majority answered all the questions and did not encounter any problems in completing and sending the test.

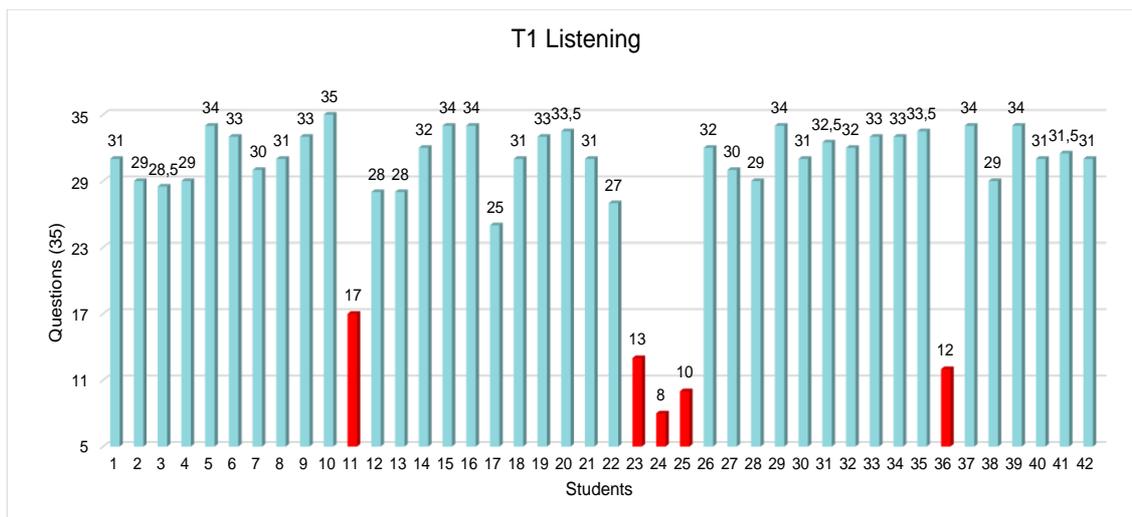


Figure 20 Listening scores in T1

The number of students is shown on the X-axis; the number of correct answers given to the listening part is displayed on the Y-axis. The red bars refer to those students that did not reach at least 60% of correct answers. For instance, students n.11, n.23, n.24, n.25, n.36.

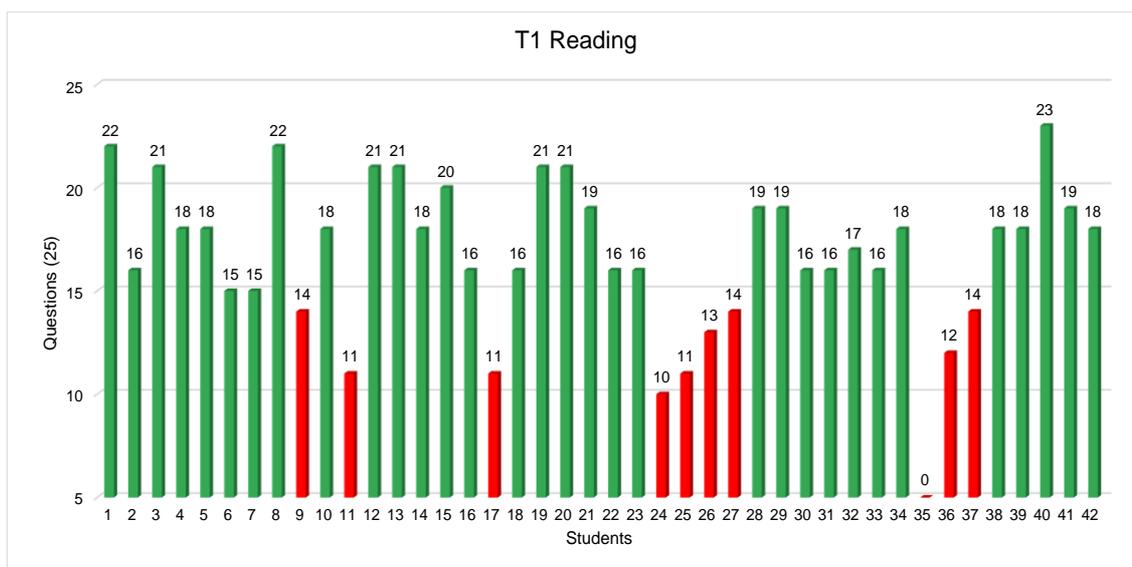


Figure 21 Reading scores in T1

The number of students is shown on the X-axis; the number of correct answers given to the reading part is displayed on the Y-axis. The red bars refer to those students that did not reach at least 60% of correct answers. For instance, students n.9, n.11, n.17, n.24, n.25, n.26, n.27, n.35, n.36, n.37.

As previously stated, most of the participants got more than 60% of correct answers and therefore passed T1. Descriptive statistics in table 25 shows that the minimum score reached in T1 was 18 (30% of correct answers) while the maximum was 54.5 (91% of correct answers) out of 60 questions. The participants' score was

45.61 ± 9.20 (Mean ± SD) corresponding on average to 76% ± 15% of correct answers.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Test 1 TOT listening	42	8	35	29.06	6.79
Test 1 TOT reading	42	0	23	16.59	4.19
Test 1 TOT	42	18	54.5	45.61	9.20
Valid N (listwise)	42				

Table 25 Descriptive statistics for T1, T1L and T1R

The minimum and maximum score obtained by the students together with the mean and standard deviation were calculated.

It is worth pointing out that six students out of 42 (14%) did not reach the threshold set to pass T1 (See Figure 22). Among these, four (students n. 11, 24, 25, 36) did not reach the minimum score to pass both the two parts of T1 (red bars). Instead, the remaining two passed just one section of T1; student n. 23 passed the reading one only while student n. 35 only the listening section (See Figures 20, 21).

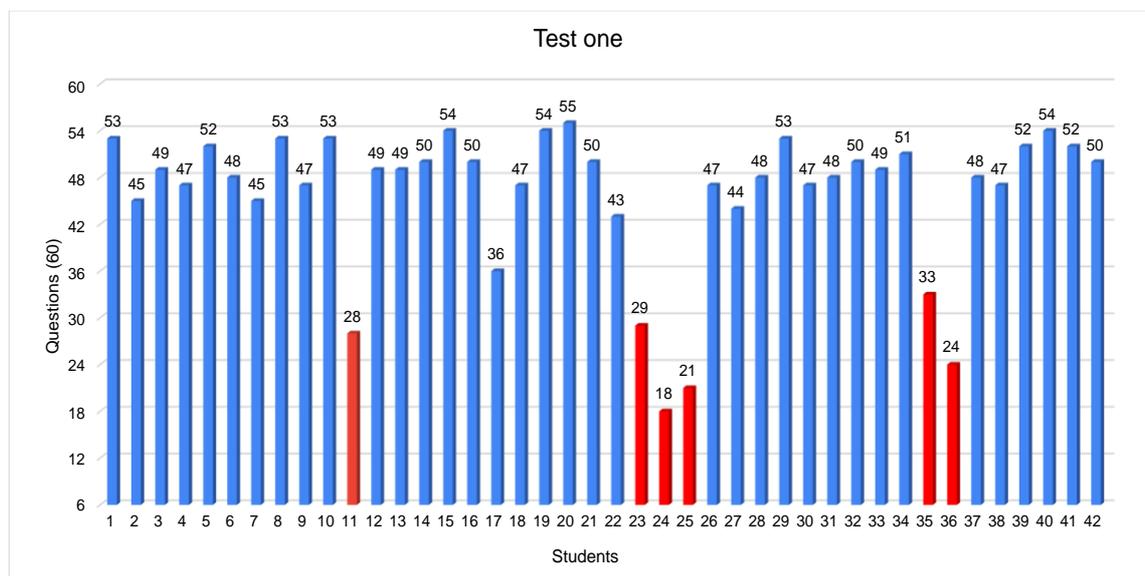


Figure 22 Students' scores in T1

The number of students is displayed on the X-axis (N=42) while the number of correct answers given to the test (out of 60) is shown on the Y-axis. The red bars refer to those participants that did not reach at least 60% of correct answers, i.e., students n.11, n.23, n.24, n.25, n.35 and n. 36.

4.2.2.1 Focus on the listening comprehension (T1L)

As confirmed by Table 24, 88% of the students got more than 60% of correct answers in the listening comprehension. The participants' score was 29.06 ± 6.79 (Mean \pm SD) corresponding on average to $83\% \pm 19\%$ of correct answers (See Table 25). In addition, the standard deviation was relatively low with respect to the mean (SD=6.79), meaning that the results were quite homogeneous (clustered around the mean and not spread out).

Figure 23 shows a breakdown of the answers given by the respondents to the listening comprehension (T1L). What stands out from the chart is that questions n. 16 and n. 31 were done correctly by less than half of the respondents. Specifically, n. 16 by 40% (Mean=40.5% \pm SD=49.6%) and n. 31 by 39% (Mean=39.3% \pm SD=47.5%) (See Table 26). In addition, the standard deviation is very high compared to the mean, meaning that the final scores are not homogeneous at all.

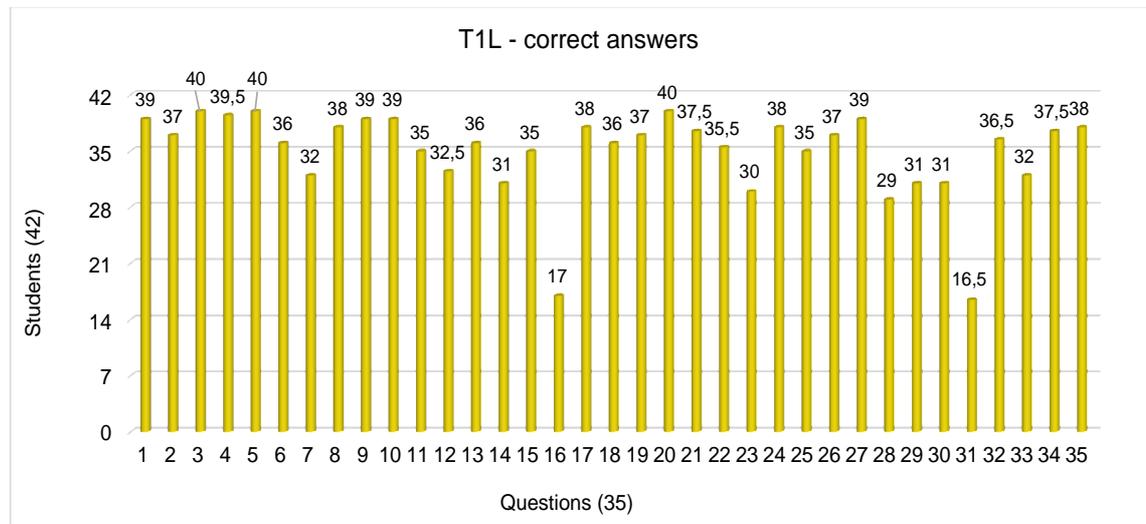


Figure 23 Students' answers to T1L

All the questions are shown on the X-axis (N=35); the number of students who gave the correct answers to the listening is shown on the Y-axis.

Descriptive Statistics

	N	Mean	Std. Deviation
Test 1 listening question 16	42	40.50	49.68
Test 1 listening question 31	42	39.30	47.54
Valid N (listwise)	42		

Table 26 Descriptive statistics for questions T1Q16L and T1Q31L

The mean and standard deviation were calculated.

Question n. 16 was part of *Task 3* of the listening section, whose main focus was on the overall comprehension of the BBC video. Students had to establish whether the statement was true or false, as shown below.

16) It takes 7 weeks to grow a new ear. *True - False*

Instead, question n. 31 was part of *Task 1*, in which students had to complete a gap-filling exercise by focusing on specific and detailed information involving the BBC video recording. In addition, to answer question n.31 correctly, knowledge of the past tense of irregular verbs was also required, as the correct answers was *rose*, past simple of the verb *to rise*.

“It’s fantastic...look, I’m 28)..... 29)..... 30)..... you are. Imagine for the first time, if you 31)..... up out of that chair, what that would feel like. That’s why I can hardly put 32)..... behind it because - you know - to feel my body 33)..... 34)..... those motions.

Table 27 below indicates that some students answered question n.31 incorrectly by writing *rise* (student n. 3), *those* (student n. 4) and *raised* (student n. 35) instead of *rose*.

STUDENTS	T1Q7L	T1Q11L	T1Q12L	T1Q21L	T1Q29L	T1Q31L	T1Q33L	T1Q34L
	cartilage	kidneys	livers	knees	tall	rose	go	through
student 3	carthilage	kidney	liver			rise		
student 4	cartilagine	kidney				those		trough
student 20			liver					
student 26			liver	neeks	taller		goes	
student 31					taller			
student 32			liver				goes	
student 35						raised		
student 42		kidney	liver					

Table 27 Qualitative data obtained from T1L. Most common errors in Task 1

The first column contains the identification numbers of those students who made vocabulary errors; the following columns show the most common vocabulary mistakes made in Task 1.

The data collected from *Task 1* of T1L were also analyzed qualitatively by highlighting the most common errors made by the respondents. While words such as *skin* (T1Q5L), *bone* (T1Q6L), *cells* (T1Q8L), *hips* (T1Q22L), *as* (T1Q28L) and *words* (T1Q32L) were written correctly by all the participants (See Appendix 6), others were partially or totally misinterpreted. As Table 27 displays, these included the following errors: spelling (e.g., cartilage; knees), singular/plural forms (e.g., kidneys, liver), grammar (e.g., tall, rose, go) and unrelated words (e.g., through).

4.2.2.2 Focus on the reading comprehension (T1R)

76% of the respondents reached the minimum threshold set to pass the reading section (at least 60% of correct answers). The minimum score observed was 0 while the maximum was 23 points. Their score was 16.59 ± 4.19 (Mean \pm SD), corresponding to $68\% \pm 17\%$ of correct responses (See Table 25). The standard deviation was relatively close to 0, meaning that the scores obtained were close to the mean and quite homogeneous.

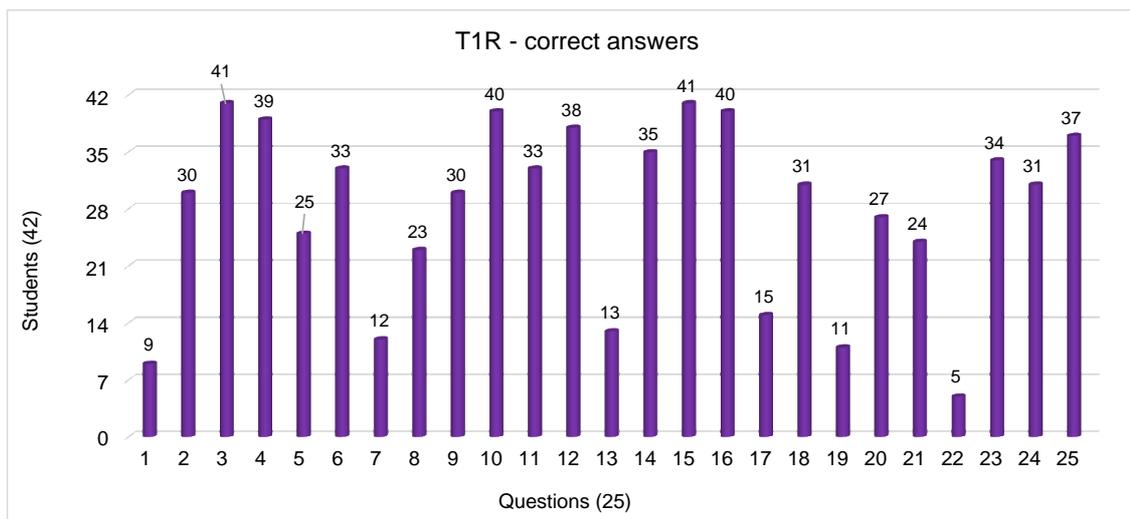


Figure 24 Students' answers to T1R

All the questions are shown on the X-axis (N=25); the number of students who gave the correct answers to the reading part is shown on the Y-axis.

All the answers given to T1R are displayed in Figure 24. What stands out is that more than 60% of the respondents did not answer correctly to six questions in Tasks 1, 2 and 3. Table 28 shows a breakdown of those questions and the descriptive statistics of the scores.

Descriptive Statistics			
	N	Mean	Std. Deviation
Test 1 reading question 1	42	21.4	41.53
Test 1 reading question 7	42	28.6	45.72
Test 1 reading question 13	42	31.0	46.79
Test 1 reading question 17	42	35.7	48.50
Test 1 reading question 19	42	26.2	44.50
Test 1 reading question 22	42	11.9	32.78
Valid N (listwise)	42		

Table 28 Descriptive statistics for questions T1Q1R, T1Q7R, T1Q13R, T1Q17R, T1Q19R, T1Q22R

Mean and standard deviation were calculated.

Questions n. 1 and n. 7 were part of *Task 1*, in which the participants had to read and understand a scientific text and then choose one correct response for each question among four options.

Question n. 1 was answered correctly by only 21% of the students (Mean=21.4% \pm SD=41.5%) while n.7 by 28% (Mean=28.6% \pm SD=45.7%). The answers given were not homogeneous and not clustered around the mean, as shown by the high standard deviation values.

1) The study published in May in *Science* states that:

A the immune system protects the body from harmful influences in the environment.

B a way to kill HIV is to detect and destroy some structural components inside the immune system.

C in the immune system there are different viruses.

D a way to kill HIV may be to destroy some influencers that are in the immune system.

7) The scientists:

A are convinced that not everyone with B*57 is an elite controller.

B are sure that everyone with B*57 may be an elite controller.

C are not sure if everyone with B*57 is an elite controller.

D don't believe that elite controllers have B*57.

Only 31% of the students answered question n. 13 correctly (Mean=31% \pm SD=46.7%). This was part of *Task 2*, which aimed at testing the students' knowledge of medical vocabulary.

13) to pursue (paragraph 3):

A to follow

B to look for

C to observe

D to make

In *Task 3*, instead, the participants had to fully understand the meaning of the text and match its paragraphs with proper headings. Question n. 17 was answered correctly by 36% of the students (Mean=35.7% \pm SD=48.5%); n. 19 by 26% (Mean=26.2% \pm SD=44.5%); and n. 22 by 12% (Mean=11.9% \pm SD=32.7%).

n. 17 - C) How to destroy HIV

n. 19 - D) Managing the virus

n. 22 - E) How the immune system works in different kinds of people

Overall, most of the respondents performed well in T1, in both sections. However, they probably had more difficulties in the reading part since 24% did not reach the minimum score set to pass it. It is interesting to note that a good number of errors occurred in *Task 1* and *Task 3* which aimed at testing the overall and

detailed comprehension of the scientific article given. By contrast, what emerged from the listening scores is that the overall comprehension (*Task 2* and *3*) was clear enough not to make many mistakes. In fact, most of the errors occurred in *Task 1*, where students firstly had to understand the words uttered and then write them down correctly. These encompassed spelling and grammar-related errors and misinterpreted terms.

Moreover, the students' performance varied as shown in Figures 19 and 20. While the majority passed both the sections of T1, few students passed just one part, mostly the listening comprehension. The reason for achieving better results in the listening part may have to do with how much that skill has been practiced and developed, either before enrolling in the programme (e.g., CLIL classes, study trips) or during the academic experience – attending classes and listening to the lecturers in the educational context. Furthermore, personal practice of English by watching movies and TV series in English in the free time may have had an impact on the students' listening abilities. This finds some correlation with the data retrieved from questionnaire one, delivered at the beginning of the first year, in which 32% stated they had previously practiced their English skills by attending private English classes, reading books and watching TV series and 50% studied through the CLIL approach before accessing university.

4.3 Presenting the findings: second academic year

In this section, the results obtained in the second year from questionnaire three (Q3) will be presented and discussed (See Appendix 3).

4.3.1 Findings retrieved from questionnaire three

All the questionnaires (Q1, Q2, Q3) focused on the medical students' perceptions of their learning experience through the medium of English during the first academic year (Q1, Q2) and the second one (Q3). Questionnaire three was delivered at the end of the second year and 35 students participated in the survey.

4.3.1.1 Participants' English proficiency

At the end of the students' second year, many students self-evaluated their English proficiency level, as can be observed in Table 29. Around 60% evaluated their own receptive and productive skills as corresponding to the C1 level; a lower number rated their listening (29%) and reading (23%) skills as corresponding to the C2 level. Instead, approximately 30% of them believed to have a lower level in productive skills, as in the case of written production (B1 – 11%; B2 – 26%), written interaction (B1 – 14%; B2 – 23%) and spoken production (B1 – 14%; B2 – 20%). Overall, the data showed that more than half of the students believed they had a C1 level in most of the language skills while the remaining reported lower levels ranging from B2 to B1. What stands out from Table 29 is that approximately 10% of the students self-evaluated most of their skills at a B1 level, which is anyway below the threshold requirement to enter the EMI medical programme. This finds some correlations with Q1-10, in which a similar percentage of students self-evaluated their overall competence as B1 and even as A1. Therefore, it may be hypothesized that a small number of students have never had strong confidence in their language skills and have not noticed any improvement after two years of studies in the English-only formula.

	Listening		Reading		Spoken Interaction		Written Interaction		Spoken Production		Written Production	
Scale	N	%	N	%	N	%	N	%	N	%	N	%
C2	10	29%	8	23%	2	6%	3	9%	2	6%	1	3%
C1	20	57%	20	57%	21	60%	19	54%	21	60%	21	60%
B2	5	14%	5	14%	7	20%	8	23%	7	20%	9	26%
B1	-	-	2	6%	5	14%	5	14%	5	14%	4	11%
A2	-	-	-	-	-	-	-	-	-	-	-	-
A1	-	-	-	-	-	-	-	-	-	-	-	-

Table 29 Students' self-evaluation of their own English skills according to the CEFR scale (Q3-8)

N=35

Each column shows the number and percentage of students with a certain English level in each skill. One option only could be chosen for each skill.

Taken together, these findings show that the receptive skills are stronger than production and interaction, as also emerged at the beginning of the first year (questionnaire one), and that the overall proficiency level perceived by the respondents is C1 (See Section 4.2.1.2). These data are confirmed by their answers in Q3-17, in which 71% expected their classmates to have a C1, followed by a B2. Overall, according to them, their peers' English competence is *generally high* (Q3-16 - 77%), as shown in Table 30.

Q3-16 What is the students' English competence like?

(Generally very high=5; Generally very low=1)

Generally very high		Generally high		Generally neutral		Generally low		Generally very low		Mean
N	%	N	%	N	%	N - %	N - %	N - %	N - %	
3	9%	27	77%	5	14%	-	-	-	-	3.94

Table 30 Students' perceptions of their classmates' English competence (Q3-16)

N=35

Data are shown according to a five-point Likert scale ranging from generally very high to generally very low.

On the other hand, higher expectations were expressed as regards the lecturers' proficiency, which according to their answers (Q3-15) was expected to range between C1 (71%) and C2 (29%). 42% even expected to have English native lecturers, as also claimed in questionnaire two (Q2-11), where the percentage was slightly lower. A possible explanation for this might be related to the lecturers' limited English skills, reported by the respondents several times in Q1 and Q2. In fact, whereas they appreciated their efforts to rephrase and repeat when the content was unclear, some were worried about losing relevant information because of language issues. When they were asked the lecturers' general English competence, roughly 70% rated it as *generally neutral* and 17% even *low*. 14% only believed it was *generally high* (See Table 31).

Q3-14 What is the lecturers' English competence like?

(Generally very high=5; Generally very low=1)

Generally very high	Generally high	Generally neutral	Generally low	Generally very low	Mean
N - %	N %	N %	N %	N - %	
-	5 14%	24 69%	6 17%	-	2.97

Table 31 Students' perceptions of the lecturers' English competence (Q3-14)

N=35

Data are shown according to a five-point Likert scale ranging from generally very high to generally very low.

4.3.1.2 Language experience in EMI

As in Q1 and Q2, the students' language experience in the EMI environment was also observed in Q3 by considering both their answers to open and closed-ended questions. According to most of the students' answers to Q3-3, attending classes in English in the second year was an *easy* (46%) and *very easy* task (29%) because some were already familiar with English as the main language of instruction at school level and did not report any specific issues. Others got used it throughout the first two years, as English was the main language used during the lessons, exams and office hours. Indeed, lecturer-student interactions usually took place in English (Q3-6; 92%), especially during the exams (Q3-4; 95%) where English was mandatory. Likewise, communication among peers was mostly in English (Q3-5; 80%) but included some Italian (20%), especially among Italian students.

Table 32 reports the findings of question 7 (Q3-7), which focused on the degree of difficulty perceived by the respondents regarding common activities done in EMI classes. The question, which was also proposed in the previous questionnaires (Q1 and Q2), was based on a five-point Likert scale of one (difficult) to five (very easy).

Q3-7 According to your experience, how easy (5) or difficult (1) are the following tasks?						
<u>Tasks</u>	Follow an EMI class		Take notes in ENG		Read course material in ENG	
Values	N	%	N	%	N	%
very easy	9	26%	9	26%	-	-
easy	23	66%	21	60%	8	23%
neutral	3	8%	4	11%	20	57%
difficult	-	-	1	3%	7	20%
very difficult	-	-	-	-	-	-
Total	35		35		35	
Mean	4.17		4.08		3.02	
<u>Tasks</u>	Interact with lecturers in ENG		Interact with classmates in ENG		Understand specialized vocabulary in ENG	
Values	N	%	N	%	N	%
very easy	9	26%	17	49%	7	20%
easy	17	49%	14	40%	17	49%
neutral	6	17%	1	3%	11	31%
difficult	3	8%	3	8%	-	-
very difficult	-	-	-	-	-	-
Total	35		35		35	
Mean	3.91		4.28		3.88	

Table 32 Degree of difficulty of specific tasks according to a five-point Likert scale (Q3-7)

N=35

The columns display six common activities performed in class. The number and percentage of students' answers are shown according to a five-point Likert scale ranging from very easy to very difficult. Only one option could be chosen for each skill.

From these data we can see that all the activities proposed were rated as *very easy* and *easy*, except for reading course material in English, which was rated slightly lower. In fact, more than half of the respondents (57%) judged it as a *neutral* activity, whereas for others it was an *easy* (23%) and even *difficult* (20%) task. Understanding specialized terminology in English was also considered as a *neutral* activity by 31%, even if the majority considered it as either *easy* (49%) or *very easy* (20%). Instead, most of the students thought that following an EMI class and interacting with classmates in English were (*very*) *easy* tasks. No student selected the option 1 (*very difficult*) for the given tasks.

The data are somewhat in line with those retrieved from Q2 as regards the degree of difficulty encountered by the respondents in the performance of the different activities. In fact, similarly to Q2, the majority felt quite comfortable in attending lectures and communicating with peers in English. By contrast, the degree of confidence in reading in English decreased considerably from the beginning of the first year (Q1) to the end of the second (Q3). This may be explained by the fact that at the beginning of the first year, the respondents were not aware of the difficulty in reading scientific publications and specialized content in English, since half of the respondents studied in their mother tongue in secondary school and did not experience the CLIL approach. Consequently, some of them were not used to studying through the medium of English. In addition, since the degree of difficulty of the disciplines learned together with the quantity of content studied at school level are slightly lower compared to academia, it may be hypothesized that students might have underestimated the challenges of certain tasks at a higher educational level.

4.3.1.3 Perceptions of language improvement (second year)

At the end of the second year, 67% of the respondents perceived some degree of English improvement (Q3-9 – See Table 31), especially in vocabulary and reading skills, which were made explicit in the open comments box in the questionnaire and shown below.

“Because we had to use English every day to follow lessons, interact with classmates and professors”.

“The large amount of reading in English has improved my overall vocabulary and grammar”.

“Studying in English helps build up my listening and reading skills”.

“Being exposed to a language helps”.

“Because of the English environment”.

A good percentage of students believed that their English skills improved because of the EMI environment where they studied, in which a good deal of interaction took place in English. According to them, the daily use of the language played a central role in the development of their skills, especially the knowledge of technical vocabulary and grammar, and reading comprehension.

Q3-9 Have your English skills improved?		
Response	Response total	%
Yes	23	66%
I don't know	8	23%
No	4	11%

Table 33 Students' perception of their English language improvement (Q3-9)

By contrast, 23% were not aware whether or not they had improved while 11% thought that their language competence had not increased. While some students did not feel comfortable in judging their English proficiency, others thought that the COVID-19 pandemic negatively affected their language development, as most of the university life migrated to online platforms. This was also confirmed by question 18 (Q3-18), in which 68% claimed that their learning process was influenced by the outbreak of the pandemic.

“Little to no valuable practice because of COVID-19”.

“I cannot be really objective when I have to consider my language skills”.

“It's hard to tell with remote teaching”.

“Maybe during the first part of the year but studying at home during the pandemic has not improved my English”.

The data retrieved from Figure 25 show the students' self-perceived English improvement, according to which the receptive skills were the ones that mostly improved. In fact, approximately 70% believed to have acquired better reading skills, followed by vocabulary (63%) and listening (54%). As regards the productive skills, writing was the least improved (less than 30% in both written

interaction and production) while speaking was slightly higher (but less than 50% of the respondents). If compared to the findings collected in Q2, while the reading skills were the ones that mostly improved both at the end of the first year and the second, spoken interaction decreased considerably at the end of the second year. This has definitely to do with the learning experience in their second year, during the coronavirus pandemic. To quote a few issues, already mentioned in Q2-23, they involved a reduced quality of interaction, unease about interacting online and difficulties in getting in touch with lecturers, classmates and patients. Under those circumstances, it may be hypothesized that the respondents did not have the opportunity to practice their speaking skills.

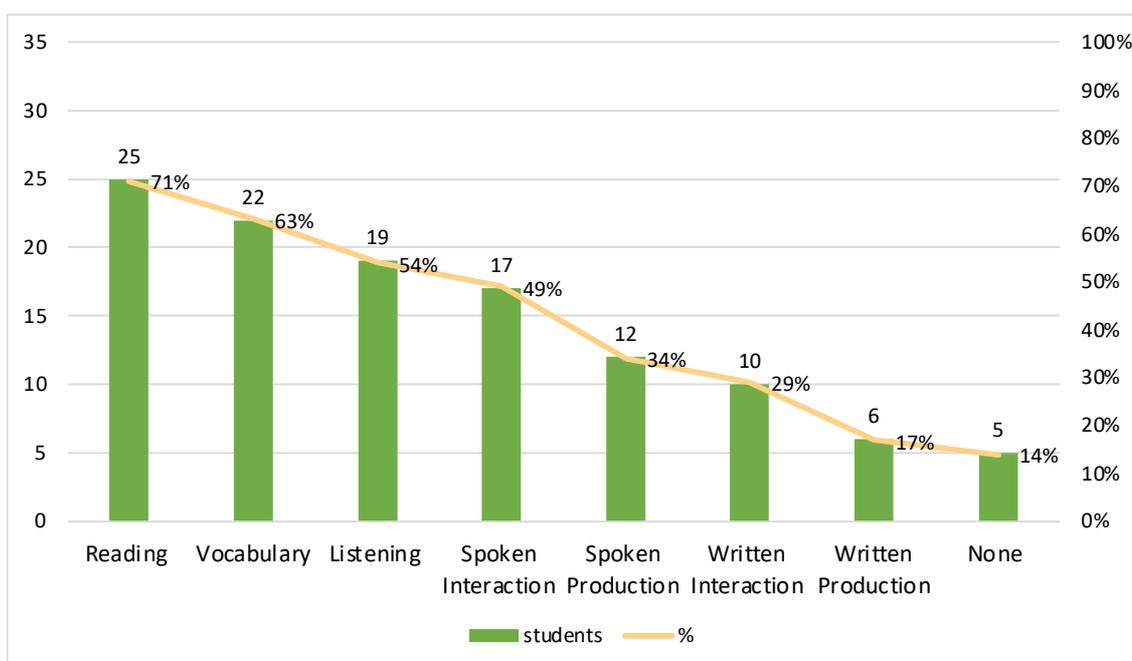


Figure 25 Students' self-evaluation of their own skills improvement (Q3-10)

Language skills are shown on the X-axis while the number and percentage of answers on the Y-axis.

Overall, at the end of the second year most of the respondents felt that their English competence had improved, but this may have occurred incidentally (60%), i.e., without any direct and voluntary effort to do so. Instead, 5% thought that their English improved voluntarily and for 26% it was facilitated by both the language input received (incidentally), both on-campus and outside, as well as their willingness to develop their skills (voluntarily). Actually, they believed that certain

activities and personal habits contributed to their language experience (Q3-12) such as watching movies and TV series in English (92%), listening to the radio and podcasts in English (71%), reading books (63%), using dictionaries to check the right pronunciation (43%) and interacting with classmates for clarifying any language doubt (18%). Surprisingly, no one chose the option “*I usually ask my English language teacher for language clarifications*”, even though two practical English language modules are offered in the first and third years of the EMI programme. According to their open comments to Q3-13 about the language support provided in the programme, some identified the English practical lessons as a type of support while others relied on the help of their classmates. As regards the medical language course, it was perceived by most of the respondents as a helpful resource to expand their English knowledge. They appreciated the type of classes, which were mostly practical and aimed at the improvement of specific skills. Nonetheless, according to their answers, 40 hours in two years proved insufficient for a tangible development and improvement of the four skills.

These findings support the idea that studying in an English-medium environment may contribute to the students’ English development, as also perceived by the sample observed. According to the respondents, their English proficiency expanded incidentally throughout two academic years and involved all their skills, even if to varying degrees. In fact, the receptive skills together with their vocabulary knowledge seemed to be the ones that mostly improved during the time observed.

4.3.1.4 Satisfaction at the end of the 2nd year

By the end of the second year, roughly 50% of the respondents were *slightly satisfied* (Q3-1 – Table 34) with the previous academic year and their expectations were partially (70%) met (Q3-2). The main reason for such feelings is largely due to the COVID-19 pandemic, which altered the student’s academic life. Indeed, the constant use of a screen to study, the lack of human contact and interaction and the general fear due to those uncertain times negatively influenced the students’ performance and learning progress.

Q3-1 How satisfied are you with your second academic year (2020/2021)?

(Extremely satisfied=5; Not satisfied at all=1)

Extremely satisfied	Very satisfied	Moderately satisfied	Slightly satisfied	Not satisfied at all	Mean
N - %	N %	N %	N %	N - %	
-	7 20%	10 29%	18 51%	-	2.68

Table 34 Degree of satisfaction of the second academic year (Q3-1)

N=35

Data are shown according to a five-point Likert scale ranging from extremely satisfied to not satisfied at all.

The remaining respondents were either *moderately satisfied* (29%) or *very satisfied* (20%) as they got good results in the exams and enjoyed the multicultural environment where they studied. In fact, when they were asked whether they would prefer studying in their mother tongue (Q3-19), 80% said “no”. In fact, although they thought that some general improvements may be implemented to increase the quality of English and the course organization, they were glad to be enrolled in this programme and to keep studying in English.

To sum up, this section presented the results obtained from questionnaire three, sent at the end of the second year. A general advanced level of English (C1) emerged from the students’ perceptions which allowed them to communicate effectively with classmates and lecturers. The professors’ language competence instead was considered as slightly lower than the students’, sometimes causing misunderstandings and doubts. Nonetheless, the language issues appeared to be overcome thanks to the efforts of the lecturers in answering all the students’ questions, in rephrasing and repeating when requested.

The findings also showed that roughly 70% of the students thought that their language skills improved over two years. The improvement, which was predominantly incidental, mostly involved their vocabulary and reading skills but also all the other abilities, albeit to a smaller extent. Although they felt satisfied with their language development, the general degree of satisfaction at the end of the second year was not very high, which according to their comments was due to the pandemic, not to reasons related to the organization of the degree course.

4.3.2 Findings from language test two

Test two (T2) was taken by 50 (51%) out of 98 students at the end of their second year (See Appendix 7). Similarly to T1, a selection of students who took both T1 and T2 was made, in order to run the Paired-Samples T Tests in SPSS. As a consequence, 8 students were excluded from the analysis because they did not take T1. Overall, 42 out of 98 participants (43%) completed T1 and T2. Table 33 presents the percentage of the students' outcomes in T2.

Values	Listening		Reading		Listening + Reading	
	N	%	N	%	N	%
≥ 60%	38	90%	37	88%	38	90%
< 60%	4	10%	5	12%	4	10%

Table 35 Students' outcomes in T2

N=42

The columns display the number and percentage of students who achieved more or less than 60% of correct answers in the listening and reading parts and in the overall test.

What is interesting about the data presented in Table 35 is that the vast majority of the medical students got more than 60% of correct answers in both the listening (90%) and reading (88%) comprehensions. In fact, 90% of them passed T2.

The students' scores gained in T2 are shown in figures 26, 27 and 28 in which the participants (N=42) are on the X-axis while the number of correct answers given to the listening part (Figure 26), to the reading (Figure 27) and the overall score achieved in T2 (Figure 28) are on the Y-axis. The red bars refer to the scores below the pass mark (< 60% of correct answers) while the grey, pink and yellow bars refer to the scores that are ≥ 60% of correct answers. What stands out from the aforementioned figures is that 83% passed both parts while 5% failed the entire test. Instead, 12% passed just one section of the test as in the case of students n. 23, 25, 31, 32 and 36. Among these, three students (n. 31, n. 32 and n. 36) passed only the listening comprehension and two (n. 23 and n. 25) passed only the reading.

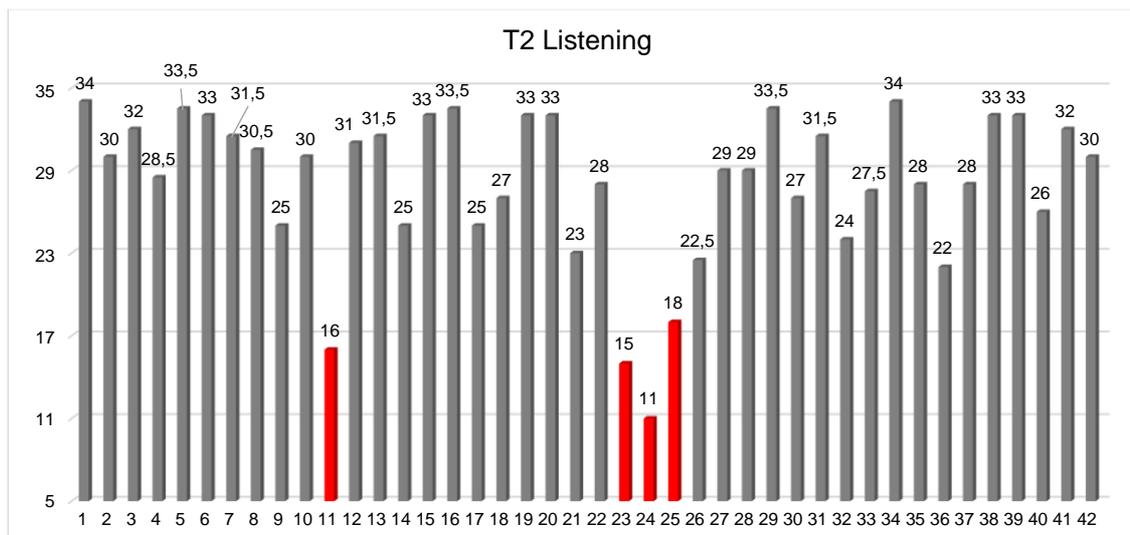


Figure 26 Listening scores in T2

The number of students is shown on the X-axis; the number of correct answers given to the listening part is displayed on the Y-axis. The red bars refer to those students that did not reach at least 60% of correct answers.

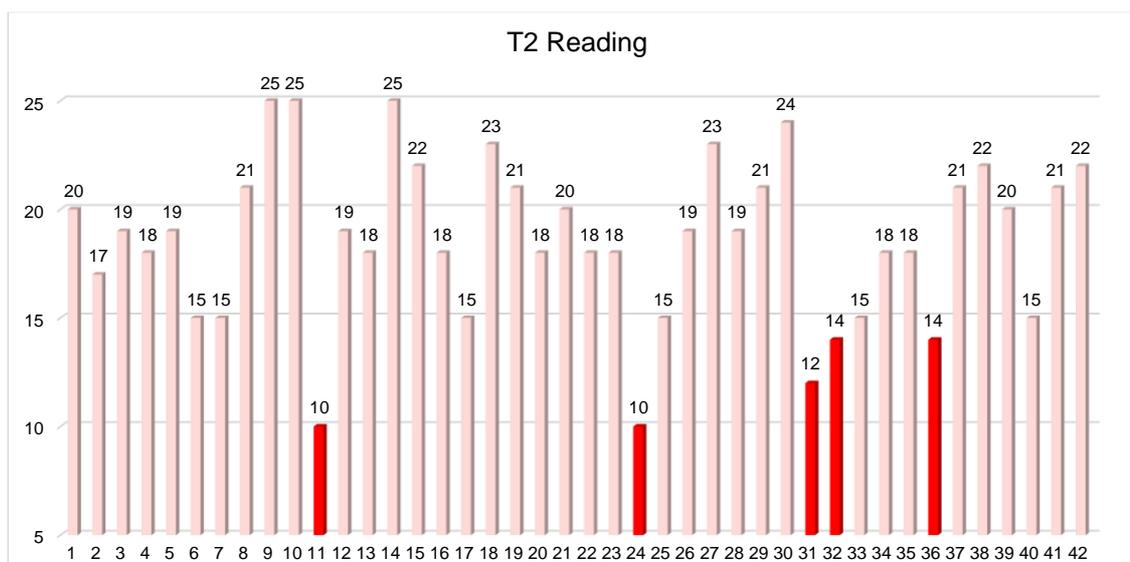


Figure 27 Reading scores in T2

The number of students is shown on the X-axis; the number of correct answers given to the listening part is displayed on the Y-axis. The red bars refer to those students that did not reach at least 60% of correct answers.

On the whole, only 4 students (9%) out of 42 did not pass T2, as displayed in Figure 28.

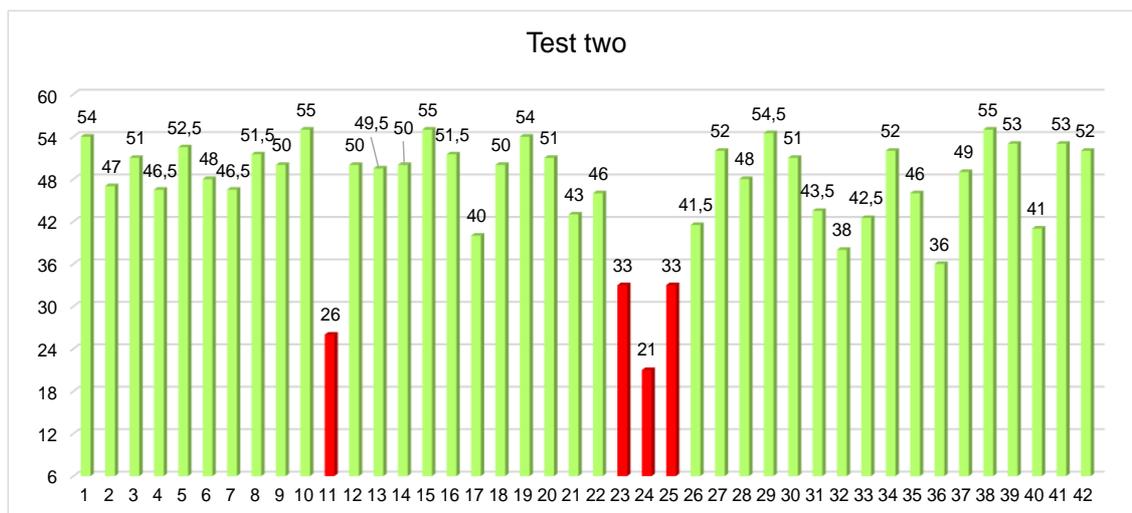


Figure 28 Students' scores in T2

The number of students is shown on the X-axis; the number of correct answers given to the listening part is displayed on the Y-axis. The red bars refer to those students that did not reach at least 60% of correct answers.

A statistical analysis was also performed for the T2 outcomes, using SPSS. Descriptive statistics in Table 36 showed that the minimum score in T2 was 21 (35% of correct answers) while the maximum was 55 (92% of correct responses) out of 60 questions. Students scored 47 points on average (Mean=46.73 ± SD=7.86), corresponding to 78% ± 13% of correct answers. Since the standard deviation was relatively low, the variation from the mean was not very high and the scores were quite homogeneous.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Test 2 TOT listening	42	11	34	28.11	5.52
Test 2 TOT reading	42	10	25	18.61	3.75
Test 2 TOT	42	21	55	46.73	7.86
Valid N (listwise)	42				

Table 36 Descriptive statistics for T2, T2L and T2R

The minimum and maximum score reached by the students together with the mean and standard deviation were calculated.

4.3.2.1 Focus on the listening comprehension (T2L)

The majority of the participants (90%) passed the listening comprehension since they scored more than 60% of correct answers in T2L (Table 35). Descriptive statistics confirmed that on average they got 28 points (Mean=28.11 ± SD=5.52). The minimum score obtained was 11 while the maximum was 34 out of 35 questions. Figure 29 below shows a summary of the students' responses to T2L.

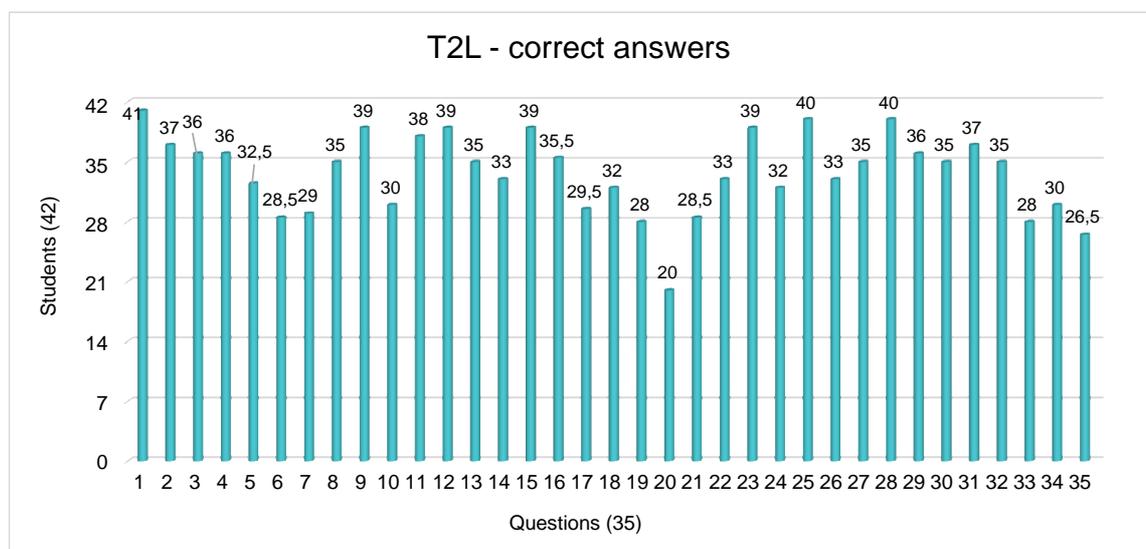


Figure 29 Students' answers to T2L

All the questions are shown on the X-axis (N=35); the number of students who gave the correct answers to the listening part is displayed on the Y-axis.

All the questions in T2L were answered correctly by more than 65% of the students, except for questions n. 20 (48%) and n. 35 (63%) (Figure 29). Both were part of *Task 1*, in which it was requested to fill the gaps in small paragraphs by adding the words heard.

Descriptive Statistics

	N	Mean	Std. Deviation
Test 2 listening question 20	42	47.6	50.55
Test 2 listening question 35	42	63.1	48.21
Valid N (listwise)	42		

Table 37 Descriptive statistics for questions T2Q20L and T2Q35L

Mean and standard deviation were calculated.

Over half of the students did not answer question n.20 while 48% did it correctly (Mean=42.9% ± SD=50.5%). Similarly, question n.35 was left blank by more than 30% of the students, with the exception of one of them who gave the wrong answer (See Table 37). Instead, 63% answered the question (Mean=63.1% ± SD=48.2%). These results were rather unexpected because the correct answers, that were *complications* (Q.20) and *invention* (Q.35), do not belong to any technical or specialized language domain, which may have been more challenging.

- According to Erin O'Donohue of "Embrace":

(..) main causes of death: (18).....(19).....(20)..... related to low birth rate and (21)..... including (22)..... (..)

- "Erin's idea is about taking an (32) technology and finding a (33) way to use it - it's one idea from one woman but millions of (34) could be changed by its (35)"

Therefore, it may be hypothesized that the reasons for making such errors were due to the following reasons: (1) the speed of the recording; (2) the lack of time to write all the words, as in the case of questions n. 18, 19 and 20, which were uttered all in a row.

STUDENTS	T2Q3L	T2Q4L	T2Q5L	T2Q6L	T2Q15L	T2Q16L	T2Q17L	T2Q21L	T2Q22L	T2Q32L	T2Q34L	T2Q35L
	cheaper	available	losing	benefits	4 million	1 million	3 million	prematurity	hypothermia	existing	lives	invention
student 4									hypothermia			
student 5				benefit								
student 7								immaturity				
student 8					million	million	million					
student 12				benefit			3 millions					
student 13				benefit								
student 15			loosing						hyperthermia			
student 16			loosing		4 millions		3 millions					
student 21					4 millions		3 millions					
student 26											lives	
student 27	cheeper		loosing									invention
student 29			loosing									
student 31			loosing		4 millions		3 millions					
student 33											lives	
student 41		available							hypotermia	existing		

Table 38 Qualitative data obtained from T2L. Most common errors in Task 1

The first column contains the identification numbers of those students who made vocabulary errors; the following columns show the most common vocabulary mistakes in Task 1.

Table 38 above shows the most common mistakes in *Task 1* made by the respondents. They have been grouped into different error categories: spelling (e.g.,

cheaper, available, losing; million; hypothermia; existing; invention); singular/plural forms and irregular plurals (benefit; 4 million; lives); unrelated words (prematurity; hypothermia).

4.3.2.2 Focus on the reading comprehension (T2R)

Nearly 90% of the respondents (See Table 35) got more than 60% of correct answers in the reading comprehension (T2R). 10 out of 25 was the minimum score registered in T2R while 25 was the maximum, which means that some students got 100% of correct answers in the reading part. These students were n. 9, n. 10 and n. 14 (See Figure 27).

On average, they achieved 19 points (Mean=18.61 ± SD=3.75), corresponding to 76% ± 15% of right responses (See Table 36). Similarly to the listening comprehension, the standard deviation was low, meaning that most of the students' scores were close to the mean and quite homogeneous. Figure 30 reveals the students' answers to T2R and Table 39 shows descriptive statistics for selected questions.

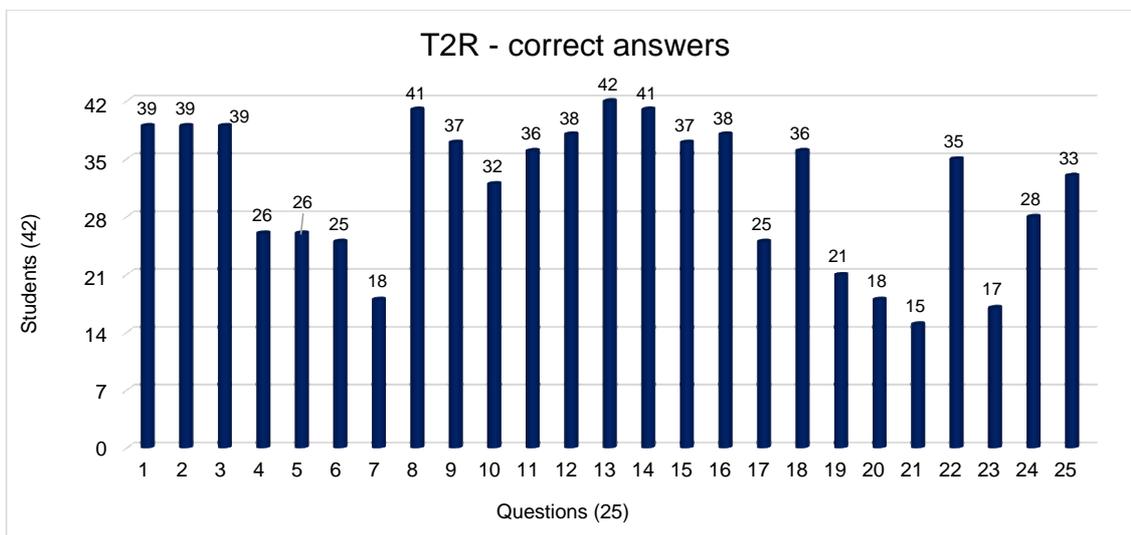


Figure 30 Students' answers to T2R

All the questions are displayed on the X-axis (N=25); the number of students who answered the reading part correctly is shown on the Y-axis.

Descriptive Statistics			
	N	Mean	Std. Deviation
Test 2 reading question 7	42	42.9	50.09
Test 2 reading question 8	42	97.6	15.43
Test 2 reading question 13	42	100.0	0
Test 2 reading question 14	42	97.6	15.43
Test 2 reading question 19	42	50.0	50.61
Test 2 reading question 20	42	42.9	50.09
Test 2 reading question 21	42	35.7	48.50
Test 2 reading question 23	42	40.5	49.68
Valid N (listwise)	42		

Table 39 Descriptive statistics for questions T2Q7R, T2Q8R, T2Q13R, T2Q14R, T2Q19R, T2Q20R, T2Q21R, T2Q23R

Mean and standard deviation were calculated.

What is striking about figure 30 is that question n. 13 was answered correctly by all the respondents (100%) and n. 8 and n. 14 by 41 students out of 42 (98%). Question n. 13 (Mean=100% \pm SD=0) and 14 (Mean=97.6% \pm SD=15.4%) were part of *Task 2*, which aimed at testing the respondents' vocabulary abilities.

13) wage (paragraph 3)

- A) reduced working space
- B) money paid to employees
- C) time off
- D) sick leave

14) mandatory (paragraph 4)

- A) compulsory
- B) voluntary
- C) optional
- D) extended

Instead, question n. 8 was part of *Task 1*, whose focus was on the detailed comprehension of the article given. In addition, a certain knowledge of the conditional forms was required to give the correct answer. Overall, 98% of the respondents got it right (Mean=97.6% \pm SD=15.4%). The results were quite homogenous as the standard deviation was very low.

8) People living in southern Fresno

- A) would have lived better if racial segregation and inequality hadn't existed.
- B) would have lived better if racial segregation and inequality couldn't had existed.
- C) would lived better if racial segregation and inequality hadn't existed.
- D) would live better if racial segregation and inequality couldn't existed.

By contrast, question n. 7 from Task 1 was answered wrongly by 57% of the respondents (Mean=42.9% ± SD=50%).

7) In San Joaquin Valley

- A) no white people live there
- B) living conditions are terrific
- C) people still struggle to get bank loans
- D) discrimination dates back to the beginning of the 21st century

Other errors were also made in *Task 3*, in which the respondents had to select the most appropriate headings for paragraphs of the article. Precisely, half of the students got question n. 19 wrong (Mean=50% ± SD=50,6%), followed by n. 20 (57%) (Mean=42.9% ± SD=50%), n. 21 (64%) (Mean=35.7 ± SD=48.5) and n. 23 (60%) (Mean=40.5 ± SD=49.6).

n. 19 - E) A long history of inequalities
n. 20 - I) Loss of public services
n. 21 - G) Dollars first
n. 23 - C) Discriminated areas

Overall, the students' performance in T2 was very high, since 90% reached more than 60% of correct answers in both the listening and reading comprehensions.

As regards the listening part, the findings indicated that while the participants got high scores and made few mistakes in the overall video comprehension (*Task 2* and *3*), *Task 1* was the section with the highest number of errors. Students had a twofold goal that consisted in understanding the words and then writing them down. In fact, in this section, they were requested to fill the gaps in small paragraphs by writing the words heard in the video recording, the majority of errors referred to wrong spelling and singular/plural forms and misinterpreted words. This may be due to the fact that students have not practiced their writing skills, either in the form of note taking or in sitting exams, especially during the

first two academic years. In fact, most of the activities planned and the exams are oral and practical. These results matched with those observed in earlier studies which argued that writing is one of the most challenging tasks to perform in the EMI context (Kırkgöz, 2005; Sert, 2008; Hellekjær, 2010; Evans and Morrison, 2011; Kamaşak et al., 2020).

As regards the reading part, data suggested that the participants had some difficulties in choosing the right headings of the paragraphs of the article, requested in *Task 3*. In fact, more than half of the students gave wrong answers to that part of the test. Instead, higher scores were achieved in *Task 1* and *2* which focused on the comprehension of a scientific article and its vocabulary. This seems to be consistent with the students' feedback given in the questionnaires. In fact, according to their answers, they spend much time in reading scientific publications, studying course material and clinical records, both in class and at home. In addition, receptive skills are perceived by the respondents as the skills mostly used in class, together with their knowledge of technical vocabulary which seems also to have improved during two academic years.

4.3.3 Test one versus Test two

To observe the effects that EMI had on the students' English proficiency, their performance in Test one and Test two was observed and analyzed. Since the sample observed in this study was composed of only one group of students who took two language tests at two different times, it was decided to run Paired-samples T tests in SPSS. This statistical tool was used to compare the data sets of the same group of students, from T1 and T2, and determine whether there was a significant improvement of the mean scores in each ability. Three Paired-samples T tests were performed, which compared the results of T1 and T2, of T1L and T2L and of T1R and T2R.

The outcomes of a Paired-samples T test, which included the results of T1 and T2 obtained by the participants, are shown in Tables 40 and 41. Their score in T1 was 45.61 ± 9.20 (Mean \pm SD), corresponding to $76\% \pm 15\%$ of correct answers

while it was 46.73 ± 7.86 (Mean \pm SD) in T2, corresponding to $78\% \pm 13\%$ of correct answers.

Paired Samples Statistics				
		Mean	N	Std. Deviation
Pair 1	Test 1 TOT	45.61	42	9.20
	Test 2 TOT	46.73	42	7.86

Table 40 Descriptive statistics for T1 and T2

Mean and Standard deviation were calculated.

In addition, the p-value was higher than 0.05 ($p=0.165$), which indicated that the mean scores were not statistically significant. In fact, although their final scores increased from T1 to T2, their improvement was not statistically significant, and this was probably due to chance. Consequently, the outcomes obtained are likely to be valid for just the sample of this research. If the test was administered to a different sample, the tests results (Mean_T2 higher than Mean_T1) would not necessarily be the same.

Paired Samples Test				
Paired Differences				
		Mean	Std. Deviation	p-value
Pair 1	Test 1 TOT -	-1.12	5.13	.165
	Test 2 TOT			

Table 41 Paired-samples T test of T1 and T2

Mean, Standard deviation and p-value were calculated.

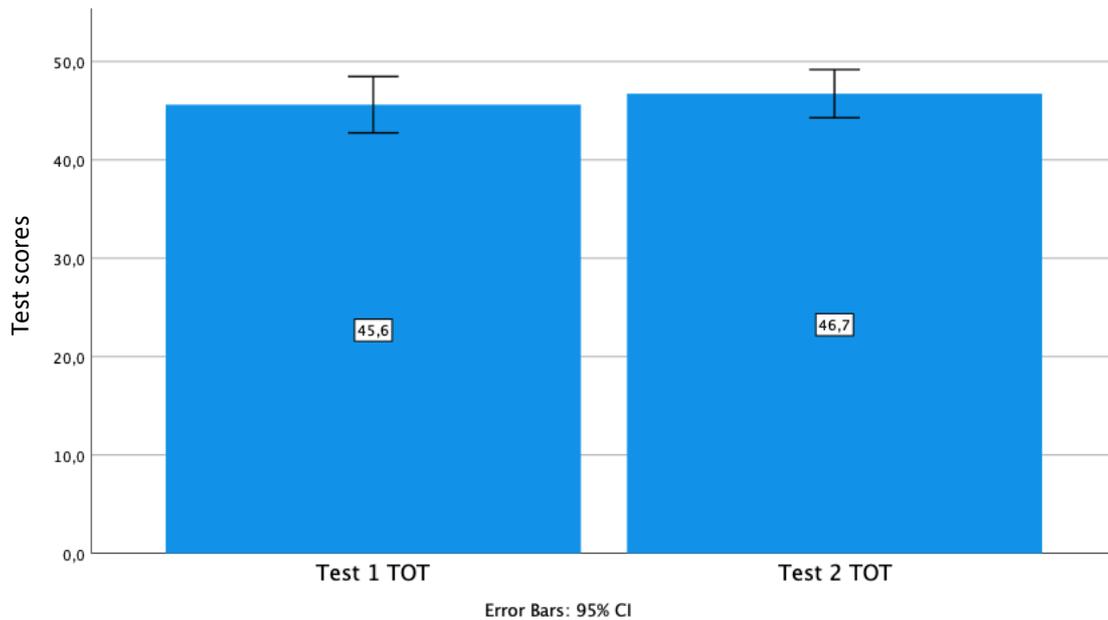


Figure 31 Difference of the mean scores between T1 and T2

Figure 31 shows a minimum difference in the means between T1 (45,6) and T2 (46,7), approximately of 1.12 points (2.45%), which indicate that T2 was performed better than T1. The findings confirmed a small improvement from T1 to T2 that varied among the students, as the standard deviation (SD=5.13) was high and the variation of the students' scores was high too. However, the difference between the two tests was not statistically significant as shown by the p-value which was higher than 0.05 (p-value=0.165). Although the results are probably due to chance and the improvement is not statistically significant, they indicated that the participants' got higher scores in the second test.

As regards the *listening skills*, the Paired-samples T test of T1L and T2L did not show any language improvement from the first to the second year. On the contrary, a decrease in mean scores can be seen in Tables 42 and 43, ranging from 29.06 ± 6.79 (Mean \pm SD) in T1L to 28.12 ± 5.52 (Mean \pm SD) in T2L. Whereas the participants gave $83\% \pm 19\%$ (Mean \pm SD) of correct answers in T1L, they performed worse in T2L, with $80\% \pm 16\%$ (Mean \pm SD) of right responses.

Paired Samples Statistics				
		Mean	N	Std. Deviation
Pair 1	Test 1 TOT listening	29.06	42	6.79
	Test 2 TOT listening	28.12	42	5.52

Table 42 Descriptive statistics for T1L and T2L

Mean and Standard deviation were calculated.

Moreover, the p-value was higher than 0.05 ($p=0.154$), which meant that the mean scores and the lack of improvement were not statistically significant.

Paired Samples Test				
Paired Differences				
		Mean	Std. Deviation	p-value
Pair 1	Test 1 TOT listening -	.94	4.19	.154
	Test 2 TOT listening			

Table 43 Paired-samples T test of T1L and T2L

Mean, Standard deviation and p-value were calculated.

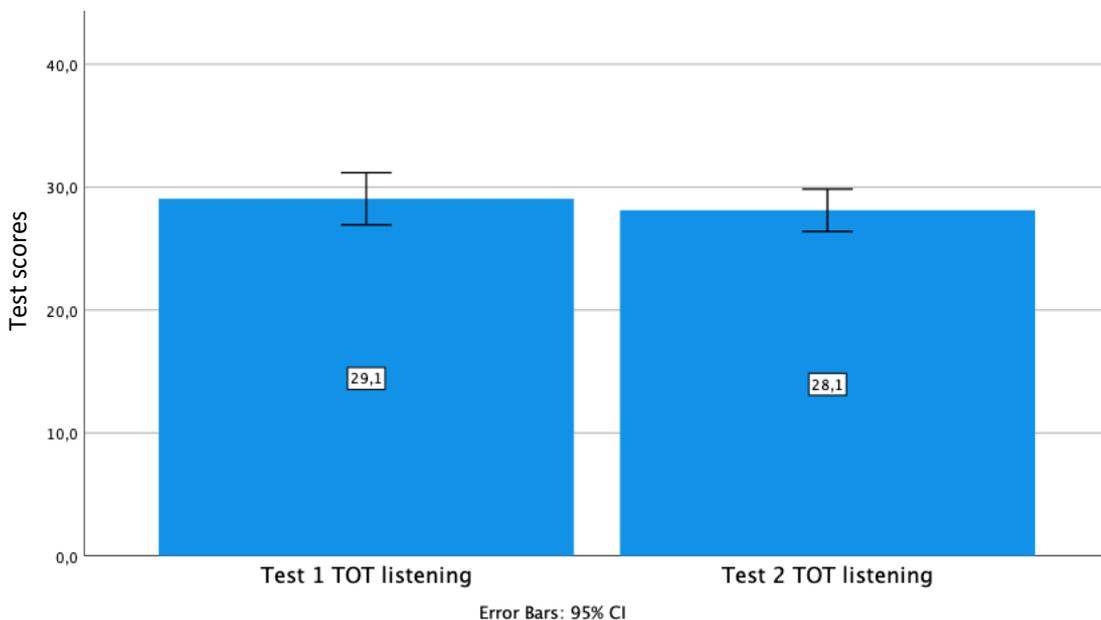


Figure 32 Difference of the mean scores between T1L and T2L

A small difference of about -0.94 points (-3.23%) between T1L and T2L is displayed in Table 43 and Figure 32 but with a high variation (SD=4.19), meaning that the participants got lower scores in T2L (28.12) compared to T1L (29.06) and were not homogeneous. Overall, the findings showed that the students did not improve from T1L to T2L, but the results were not statistically significant.

As regards the *reading skills*, the Paired-samples T test of T1R and T2R indicated a statistically significant improvement in the students' scores from the first to the second year. In fact, an increase in mean scores can be observed in Table 44, from 16.59 ± 4.20 (Mean ± SD) in T1R to 18.62 ± 3.75 (Mean ± SD) in T2R. Thus, while in T1R they gave correct answers to 66% ± 17% (Mean ± SD) of the questions, their scores in T2R reached 74% ± 15% (Mean ± SD) of correct answers.

Paired Samples Statistics				
		Mean	N	Std. Deviation
Pair 1	Test 1 TOT reading	16.59	42	4.20
	Test 2 TOT reading	18.62	42	3.75

Table 44 Descriptive statistics for T1R and T2R

Mean and Standard deviation were calculated.

Since the p-value was lower than 0.01 (p-value=0.007), the mean scores were statistically significant and not due to chance. In other words, if T1R and T2R were administered to a different group of students, similar results (Mean_T2 higher than Mean_T1) and similar language improvement are likely to be achieved.

Paired Samples Test				
Paired Differences				
		Mean	Std. Deviation	p-value
Pair 1	Test 1 TOT reading -	-2.02	4.60	.007
	Test 2 TOT reading			

Table 45 Paired-samples T test of T1R and T2R

Mean, Standard deviation and p-value were calculated.

Figure 33 below shows that the students' scores increased by 2.02 points (12.16%) from the first to the second year and that the improvement observed in their listening skills is highly statistically significant. Nevertheless, the dispersion was very high ($SD=4.60$) and the scores varied somewhat among the participants.

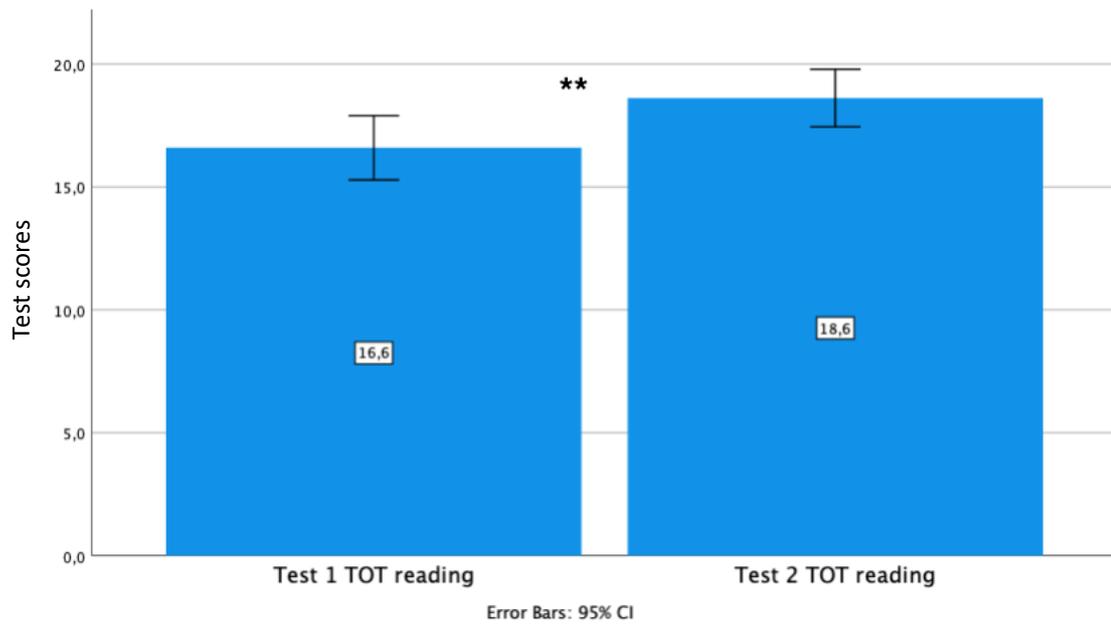


Figure 33 Difference of the mean scores between T1R and T2R

Taken together, the Paired-samples T tests indicate that the participants slightly improved from the first year (T1) to the second year (T2), even though the results were not statistically significant. The only statistically significant improvement was registered in the students' reading skills.

Overall, while 67% of the students improved their receptive skills, by obtaining higher scores in T2, 24% decreased and 4% remained the same (Table 46).

T1 to T2 scores	Listening	Reading	Overall
same	9% (4)	17% (7)	9% (4)
increase	36% (15)	57% (24)	67% (28)
decrease	55% (23)	26% (11)	24% (10)

Table 46 Percentage of participants with score change

N=42

The columns display the number and percentage of students with score change from T1 to T2.

To conclude, when looking at the listening scores, more than half (55%) got lower scores in T2 and thus no improvement in the listening skills was noticed. By contrast, they scored worse results in T2 compared to T1. These results may be due to the fact the level of English used in the videos differed from the one used in class. In fact, the listening comprehensions provided in T1L and T2L included BBC videos, which are often recorded by English native speakers and demonstrate a very high quality of the English language.

While listening had the least percentage of improvement (36%), reading got 57% of students making improvement in that area. In fact, their results increased by 2.02 points (12.16%) from T1 to T2 and the difference between the two was statistically significant, meaning that different samples would achieve similar scores if they did the same tests. The findings may be explained by the fact that EMI students extensively train their reading skills, since the course materials, the scientific publications and the medical records are in English only.

All in all, the findings from the three questionnaires and the two language tests showed some degree of language improvement during two academic years in an EMI medical programme. According to the language test results, the students' reading skills improved, which was also confirmed by their answers to the questionnaires. In fact, at the end of the second year, most of them perceived a general improvement, starting from the receptive skills, technical vocabulary, and to a lesser extent the productive skills. In addition, more than half of the students believed that their English improvement took place incidentally and unconsciously while they were engaged in other activities, which were done through the medium

of English. Indeed, the only formal language teaching and focus on form activity was offered through the medical language course in the first year which may have had an influence on their English improvement.

Chapter 5. Discussion

5.1 Introduction

This section summarizes and discusses the findings obtained from the data collection, linking the discussion to the research questions and the sub-questions posed at the beginning of this research study. In short, the findings are discussed in relation to the students' language experience in the EMI setting (RQ1) and to their English development and improvement in the time frame observed (RQ2). Considering the English-mediated environment and the students' attitudes, the starting hypothesis that has driven this research is that the learners' English proficiency improves incidentally and unconsciously while they are engaged in subject-oriented activities. This chapter concludes with some observations on pedagogical implications for the development of supportive strategies to be addressed to both students and lecturers involved in EMI.

5.2 Research Question 1: the students' language experience in an EMI degree programme in *Medicine and Surgery*

The first research question investigated the participants' language experience in an EMI medical school in a non-English speaking country (Italy). This was conducted through three questionnaires administered throughout two academic years, which elicited the students' personal opinions in relation to specific features and aspects of EMI. The use of questionnaires as a research method gave the possibility to obtain useful information about the participants' perceptions and attitudes (Cohen et al. 2007). Since the aim of the questionnaires was to gain a general understanding of the students' language experience in the EMI setting, different types of questions were included. Closed-ended and rating scale questions were useful to make comparisons among the given responses and analyze the data quantitatively but did not enable the students to freely comment on specific issues and add remarks to the themes proposed. For this reason, open questions were also

included, which allowed for more freedom in the answers and for conducting a qualitative analysis of the findings. In addition to that, the validity of a survey approach is confirmed by the large number of studies previously conducted on EMI students' perceptions, attitudes, and expectations from studying through English (Hu, Li and Lei, 2014; Chapple, 2015; Ackerley 2017; Clark 2017; Costa and Mariotti, 2017; Guarda, 2018; Arnó-Macià, Aguilar-Pérez and Tatzl, 2020; Cicillini and Giacosa, 2020a, b, c; TAEC literature database report, 2020).

5.2.1 RQ1 sub-question A: which are the main motivations that drive students to enroll in an EMI programme in Italy?

The successful proliferation of EMI degree programmes around the world has been predominantly fostered by institutional and economic driving forces towards the internationalization of higher education. While the reasons to offer such programmes revolve around the need for universities to become more competitive worldwide, to increase their institutional income and to attract international students and staff (Doiz et al., 2011; Dearden, 2015; Pulcini and Campagna, 2015; Broggin and Costa, 2017), the students who decide to opt for an English-only degree have other priorities and motivations. According to the students involved in this study, the main motivation to choose an EMI programme is related to the status of English as a global language. They recognize the increasing linguistic power that English has in the world and in the professional field where they will work in the future. As a matter of fact, especially from the 20th century onwards, the predominant use of English in varied contexts and domains has contributed to its linguistic dominance over the rest of the languages in the world (Crystal, 2003; Graddol, 2006; Plo Alastrué and Pérez-Llantada, 2015; Salomone, 2022). This issue has extensively been debated by Phillipson (1992, 2003, 2009) as regards the growing “linguistic imperialism” associated with English and by other scholars (Doiz et al., 2011, 2013; Airey et al., 2017) who expressed concern about the impoverishment of local and minority languages in academic disciplines, a phenomenon referred to as ‘domain loss’. A clear example of this issue is the massive use of English in the scientific community where it has become the main

language used in conferences, meetings and publications (Costa, 2017). Its linguistic power is perceived by some as detrimental to the prestige of other languages (Phillipson, 2009; Lasabagaster, 2015; Galloway, 2017). This is probably why more than half of the medical students claimed that studying through English might give them easier access to international publications and scientific resources. This was also pointed out by Belhiah and Elhami (2014), who reported that a major reason to choose an EMI programme in the Arab countries was closely related to the linguistic power held by English in science. According to their respondents, it might be worthwhile studying in the language mostly used in the books and resources used at university.

In addition to that, more than half of the medical students perceived the importance that mastering the language may mean in the search for future opportunities. Developing and improving their English proficiency, in fact, were other motivating factors to study through the medium of English. These findings are in line with previous studies which argued that a major reason to choose an EMI programme is to improve one's language skills in an international environment such as the EMI class (Lei and Hu, 2014; Ackerley, 2017; Costa and Mariotti, 2017; Dearden, 2018; Galloway and Ruegg, 2020; Rose et al., 2020).

Although much research on the motivations and expectations from EMI, together with the findings presented in this study, have confirmed a strong relationship between the success of EMI and the expectation to increase the students' language abilities, language improvement is not explicitly mentioned in the definitions of EMI (Dafouz-Milne et al., 2014; Dearden, 2015; Macaro, 2018; Pecorari and Malmström, 2018). While it is mostly used in reference to those non-English speaking university settings where the disciplines are taught through English, language improvement is not usually set as an educational outcome, but it is regarded as a means to communicate and learn in class.

Nonetheless, the daily exposure to English, fostered by much of the communication taking place in this language, and the input received by the students in the EMI environment led to the hypothesis that a certain degree of language development might happen, probably in an unintentional and incidental way, as previously discussed by scholars in the SLA field (Krashen, 1982, 1985, 1995;

Snow 1985; Wode 1999). As a matter of fact, the EMI context seems to have some common elements with the SLA environment, where second language development is facilitated by the language input received by the learners and the practical use of it, which takes place through communicative exchanges with other actors and the negotiation of meaning. For instance, in the medical programme investigated in this study, where more than a third of the enrolled students are non-Italian language speakers, language practice and interaction take place predominantly in English, since it is the only shared language which allows communication/intercomprehension. Thus, in such a context of immersion in the language, English improvement should not be excluded.

Generally speaking, opting for English-mediated education is perceived by the students as a gateway to better professional opportunities, to international relationships and to stronger English skills which are felt as necessary for their future. Although in EMI classes English is supposed to be treated just as a tool to communicate and to deliver subject matters, it is undeniable that it does play a central role in this context.

5.2.2 RQ1 sub-question B: to what extent are students motivated to improve their English proficiency?

The participants reported high expectations from the EMI degree programme in *Medicine and Surgery*, as regards both their language achievements and lecturers' proficiency. According to the students' answers to Q1 at the beginning of their first year, roughly 60% expected their language skills to improve during their university years, probably because they thought that studying in this language may contribute to its development. This found some correlations with their motivations to enroll in an EMI programme, that included their English improvement as one of the most frequent reasons to choose an English-mediated degree programme. This was also corroborated by other scholars who argue that students often decide to study through the medium of English so that their language skills improve while they are focused on the disciplines taught (Tatzl, 2011; Rogier,

2012; Costa and Coleman, 2013; Lei and Hu, 2014; Ackerley, 2017; Costa and Mariotti, 2017; Drljača Margić and Vodopija-Krstanović, 2017; Dearden, 2018; Galloway and Ruegg, 2020).

Among the respondents who expected their English skills to improve, just 30% declared that they practice their skills independently of the university support, through private tutoring, travels and leisure activities. Instead, the majority argued that the use of English outside the university is limited since the general levels of English proficiency in Italy are relatively low compared to other European countries (EF English Proficiency Index, 2019, 2021) and it is not generally spoken in daily life. Then, it might be argued that the students were willing to improve their language skills but that they expected their English proficiency to develop incidentally, through the language input provided by the EMI environment. As a matter of fact, according to the students' answers, the lecturers' English proficiency is essential for their learning outcomes and language improvement.

In any educational context, teachers play a crucial role in the students' learning progress as also confirmed by the SLA theories, according to which the quality of input given by the teachers has a strong influence in their education and learning (Krashen, 1982; 1985; 1995; Snow, 1985; Wode, 1999). This is possibly the reason why at the beginning of the first year over half of the respondents expected their lecturers to have a high level of English, ranging from C2 to C1. Some believe that English native speakers would be ideal for teaching EMI classes. Moreover, the students' expectations of their lecturers' proficiency increased at the end of the second year. As a matter of fact, one year after, the percentage of students stating that English native speakers would be much appreciated increased from 14% to 42%.

These findings were somewhat surprising. It goes without saying that since the EMI programmes are offered in non-English speaking countries, most of the lecturers are non-native speakers of English but should have an adequate competence to teach highly specialized content in a language that is different from their mother tongue. Nonetheless, it is still under scrutiny what the expression "adequate competence" means in the EMI context (Macaro et al., 2018). As a matter of fact, there is still no consensus on the minimum level of English required to

lecturers to work in an EMI context. As Macaro et al., (2018:54) maintain: “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”. Notwithstanding the uncertainty, some studies report that the lecturers’ recommended English levels should range between B2 and C1 (Halbach and Lázaro, 2015; O’Dowd, 2018; Dimova, 2017; Dafouz-Milne, 2018).

Overall, the inadequate proficiency of lecturers has been identified as one of the most urgent issues to tackle in the EMI context (Coleman, 2006; Dearden, 2015; Macaro et al., 2018; Aizawa and Rose, 2019). For instance, the University of Copenhagen has introduced the TOEPAS oral performance test, through which the lecturers’ skills can be assessed (Kling and Stæhr, 2012; Kling, 2013, 2015; Dimova, 2017). It is an alternative tool to evaluate and certify the lecturers’ English proficiency, other than using only internationally recognized certifications (e.g., IELTS, TOEFL, Cambridge).

The medical students involved in this study confirmed that one of the strongest motivations to choose an EMI programme was to develop their English proficiency in their academic life, in a natural and incidental way. Although some claimed to voluntarily put an effort into developing their English, by means of watching movies and reading books in the original language in their free time, most of the respondents relied on the language classes that are offered by the degree programme and the input received predominantly from their lecturers but also from their classmates. In view of all that has been mentioned so far, it can be confirmed that EMI lecturers and their proficiency levels play a key role in the students’ learning progress and in the general satisfaction of the programme, as also noted by other scholars in the field (Airey, 2016; Doiz and Lasagabaster, 2020). In light of the above considerations, much attention should be devoted to the language aspect in EMI, for instance, by establishing stricter language requirements for both lecturers and students and more language support which could meet their needs and expectations.

5.2.3 RQ1 sub-question C: what are the students' perceptions of studying in an EMI programme?

The students' attitudes and perceptions of the medical programme were observed by means of three questionnaires administered throughout two academic years. Generally speaking, the respondents were moderately satisfied with the two academic years spent in the international medical school. Their experience along with their perceptions and opinions were influenced by the COVID-19 outbreak and the online education offered during their first academic year. In the attempt to limit the spread of the virus, the Italian government applied several restrictions across the entire country, starting from March 2020, soon after the beginning of the second semester. The nationwide limits imposed on Italian citizens also regarded the entire education system. In fact, schools and universities were forced to remain closed for months and to guarantee an alternative delivery of lessons, the so-called "Emergency Remote Education" (ERE) (Bozkurt et al., 2020). This branch of distance learning emerged during the pandemic as a concrete response to an unplanned crisis and essentially consisted of remote education which made use of online tools (Cicillini and Giacosa, 2020c).

These unusual circumstances had varied implications on the academic life – e.g., the adoption of alternative teaching and learning approaches and different engagement strategies, the cancellation of mobility projects (Gatti et al., 2020) – and had an impact on the students' learning experience, which was reported several times in the questionnaires. Indeed, according to the students' answers and comments, the first semester was more satisfactory than the second one because it took place face-to-face in the medical campus. Students had the opportunity to meet classmates, lecturers, and patients in person, get used to the university environment and activities and sit the very first tests and exams in class. Instead, the second semester, as well as most of the second year, were mostly spent online due to the shift from face-to-face to virtual education.

Despite the effort made by the university administration and staff to cope with the unusual situation, the alternative ways of attending online lessons and the additional activities, the students mentioned a range of difficulties that they had to face due to distance learning. These mostly regarded the quality of communication

and interaction, the loss of human contact and technical issues due to remote education. Communication and interaction were negatively influenced by the online tools and led to misunderstandings and disappointment. For instance, some students were reluctant to interact in front of a screen and felt isolated from the community, as some remained locked at home alone and could not meet their friends and families.

As a result of online activities, students complained about the limited involvement and effectiveness of online classes which negatively influenced their views of studying in the EMI medical school. Moreover, the challenges pointed out were exacerbated by the lecturers' English proficiency, which according to the students' comments were not always adequate for that particular mode of delivering lessons. This finding is consistent with previous research which highlighted similar issues regarding the lecturers' limited English abilities (Knight, 2004; Coleman, 2006; Dearden, 2015; Guarda and Helm, 2017; Aizawa and Rose, 2019). This also emerged from other studies focused on both the lecturers' self-perceptions of their abilities (Coleman, 2006; Dearden and Macaro, 2016) and the students' point of view (Klaassen and Räsänen, 2006; Arnó-Macià and Mancho-Barés, 2015; Cicillini and Giacosa, 2020b, c). Indeed, the online mode and the lecturers limited communicative skills was perceived as an obstacle to the understanding of the subject and language improvement (Chang, Kim and Lee, 2017; Aizawa and Rose, 2019).

All in all, while these considerations highlight the need for a more accurate selection of the EMI teaching staff, who should have appropriate English competence to cope with the demands of EMI education, it might be useful to consider the characteristics of most of the EMI lecturers. They are not language specialists but experts in their scientific field; they usually have some knowledge of English as they participate in conferences and write academic papers in that language but their ability to teach through the medium of English should not be taken for granted. In fact, some of them may not be confident enough to teach their discipline in a language different from their mother tongue and may find it challenging and time-consuming, especially when it comes to redesign their teaching material in English (Mariotti, 2011). Moreover, since in each EMI class

different languages and cultural backgrounds coexist, the EMI lecturer should also play the role of an intercultural communication (ICC) facilitator by developing pragmatic skills and intercultural competences (Bennet, 2012; TAEC handbook, 2019; Molino et al., 2022). More concretely, training activities and professional development opportunities appear to be necessary to improve the lecturers' English proficiency and their abilities to cope with the multicultural setting where they work and with the needs of their students.

Notwithstanding the challenges mentioned in the questionnaires, the respondents were glad to study in an international campus, with over a third of foreign classmates coming from different European and extra EU countries. English was the language mostly used to communicate among students and lecturers and its use increased from the first to the second year as everyone got used to talk in this language. Code-switching, which took place predominantly among peers, decreased from the first to the second year. Although switching from English to the national language has proved to be a common practice in EMI settings, (Coleman et al., 2018; Jiang, Zhang, and May 2019; Kuteeva, 2020), often used to explain technical vocabulary and make humorous comments, the medical students did not report any episodes, except for those among classmates.

Overall, interaction with classmates and lecturers was considered relatively satisfactory, especially when classes were offered in the face-to-face modality as communication was more natural and effective. The switch to online lessons negatively influenced its quality for several reasons which included the difficulty of using the online platforms and the limited interactive activities. Nonetheless, even when communication and interaction were hindered by incomprehension, a considerable effort was made by all the actors to reinforce online communication through the elaboration of alternative sentences, regulation of voice speed and repetitions. As a matter of fact, previous studies on EMI have confirmed the importance of redundancy and repetitions as powerful strategies to facilitate content subject comprehension and general understanding (Lynch, 1994, 2011; Dafouz-Milne and Llinarez-Garcia, 2008; Molino, 2018).

Apart from the interaction with classmates and lecturers, considered by the respondents as an easy task to perform, students also expressed their opinions

regarding other activities done in class. For most of them, following English-mediated classes and interacting with lecturers were easy tasks and their perceptions remained the same in the two years observed. Taking notes in English, interacting with classmates and understanding technical vocabulary were initially considered very easy activities to perform but throughout the years the perceptions of difficulty increased, especially as regards specialized terminology. This confirmed previous studies which pointed out that learning and understanding technical vocabulary is a challenging task as well as performing those activities which require strong productive skills (Kırkgöz, 2005; Sert, 2008; Hellekjær, 2010; Evans and Morrison, 2011; Kamaşak et al., 2020). Contrary to expectations, the findings revealed difficulties in reading activities, as confirmed by the students' degree of confidence which decreased from the first to the second year. The medical students found reading challenging, despite passive skills are constantly used in the EMI classes. In fact, while students attend classes, they inevitably train their listening skills, even if unconsciously, as well as their reading abilities, since the educational resources are only available in English. This has been explained by some scholars as the result of the quantity of unfamiliar technical terms found in written texts, which hinder reading comprehension (Tatzl, 2011; Uchihara and Harada, 2018). Thus, it may be hypothesized that at the beginning of the first year they underestimated how demanding formal and academic English, used in books and publications, might be.

Overall, the students' language experience in an EMI medical setting was somewhat satisfactory in the two academic years. While they appreciated the international environment and the opportunity to practice their language skills, they also encountered some difficulties, mostly related to the pandemic and limited communication with their lecturers. While the former could not be predicted, the latter had already been encountered in other EMI settings. In fact, these findings seemed to be consistent with previous studies on EMI, according to which low English proficiency negatively affect the students' perceptions and learning progress. However, lecturers should not be blamed for the students' dissatisfaction as they are not language specialists and most of the times they generously offer to teach in EMI programmes. As a matter of fact, the provision of such programmes

has often been reported as a top-down decision imposed by universities for political and financial reasons (Coleman, 2006; Macaro et al., 2018) and to the detriment of the staff involved, as in the case of the lecturers (Costa and Coleman, 2013). Indeed, in certain contexts, the imposition to teach in an additional language affected the lecturers' confidence, authority and even professional identity (Dafouz-Milne, 2018; Moncada-Comas, 2020).

As a result, it seems necessary for the institutions to re-elaborate more innovative and supportive strategies, through pedagogic and language training and support which, once implemented, would encourage lecturers to innovate their teaching approaches and facilitate the students' academic achievements.

5.3 Research Question 2: Does the students' English proficiency improve during two academic years in an EMI environment?

According to the definitions of EMI, English has a purely instructional purpose which allows non-native speakers of English to communicate through a common language in a non-Anglophone educational setting. Since the aim of EMI classes is to deliver specialized academic content and encourage content-related outcomes, language development in such a context is not an intended goal but often an expected result, especially for those students who principally opt for an English-mediated degree programme in order to strengthen their proficiency. In fact, the idea that the EMI setting may be the ideal place where both content and language learning occur is supported by several scholars in the field (Brinton, Snow and Wesche, 2003; Coleman, 2006; Smit and Dafouz-Milne, 2012; Galloway et al., 2017).

Existing research has also recognized the critical role played by English in EMI classes and has reported various findings which, on the one hand, confirmed students' language gains in that context (Lasagabaster, 2008; Taguchi, 2011; Rogier, 2012; Ritcher, 2017; Ament and Barón, 2018) but, on the other hand, also raised questions about the factors that influence language learning (Lei and Hu, 2014; Macaro et al., 2018). Since EMI students are constantly exposed to language input, there is some evidence that incidental learning may take place while they are

engaged in curricular activities. Certainly, different factors may influence the development of language skills, such as the students' initial proficiency level and the lecturers' English competence, which influence the quality and quantity of provided language input. As regards the students' proficiency level, most of the institutions offering EMI programmes usually establish certain admission language criteria and check the prospective candidates' proficiency either by conducting internal assessment or by accepting external language certifications (e.g., IELTS; TOEFL; Cambridge) (Cicillini, 2021). While some scholars suggest that B2 seems to be the most suitable and common benchmark set to admit students into EMI programmes (Harsch, 2018; Harsch, Ushioda and Ladroue, 2017; Cicillini, 2021), Aizawa et al. (2020) maintain that establishing a proficiency threshold in EMI is not as straightforward as it can be imagined, and even when certain English entry requirements are set, language challenges may emerge anyway. For instance, the general levels of English in EMI classes are not always balanced among the students, as in the case of the present study where the minimum level to be admitted to the programme was B2 but the proficiency levels ranged from C1 (49%) to B2 (33%), C2 (13%) and even below the threshold set (B1 – 5%). As also reported by previous studies (Sert, 2008; Gundermann, 2014), these mixed competences across the class may have an impact on the students' language experience and English improvement.

5.3.1 RQ2 sub-question A: if so, which skills have mostly improved?

5.3.1.1 Students' perceptions of language improvement

According to the medical students' perceptions, at the end of the second year their English proficiency had improved compared to the previous year (from 28% to 66%). While in the first year, over half of them were not aware of any language progress, the following year they realized that some degree of language improvement had taken place, especially in the *receptive skills*. They believed that reading was the skill that mostly improved in both years, because they spent much time reading the course material and the medical records in English and studied for

the final exams. As a result of attending classes completely in English and of learning in an additional language, the respondents also felt that their listening skills had become stronger. They believed that learning in an English-mediated setting, where communication took place in English, helped their listening abilities to develop and improve. Moreover, attending the medical language course at the beginning of the first year may have had an impact on their language awareness and general competence. Since the language course was mainly aimed at developing the students' receptive skills, their perceptions and self-evaluation of their abilities may have been influenced by it.

These findings are in line with previous research on EMI students' perceptions, which confirmed language gains in the receptive skills (Aguilar and Rodríguez, 2012; Maiz-Arevalo and Dominguez-Romero, 2013; Belhiah and Elhami, 2015; Yang, 2015). In addition to that, the results are partly in line with Swain's thoughts (1985) about the immersion outcomes, according to which interpretive skills (passive ones) are more likely to improve compared to the expressive (active) ones.

Although the respondents thought that their *productive skills* improved during the second year, the perception of improvement decreased compared to the first year. Indeed, those abilities were felt weaker than at the beginning of their academic studies, as for spoken interaction which decreased from 64% to 49%. Overall, their perception of improvement decreased in all the active abilities: spoken production (from 57% to 34%), written interaction (44% to 29%) and production (34% to 17%).

Evidence of improved productive skills in the literature on EMI is mixed. On the one hand, and contrary to the findings of this longitudinal study, previous research showed that students' productive skills developed in EMI classes (Tatzl, 2011; Aguilar and Rodríguez, 2012; Belhiah and Elhami, 2015; Yang, 2015; Clark, 2017; Pérez-Vidal and Roquet, 2015); on the other hand, dealing with productive activities has proved to be a challenging task (Kırkgöz, 2005; Sert, 2008; Hellekjær, 2010; Evans and Morrison, 2011; Lee and Lee, 2018; Kamaşak et al., 2020), which requires a certain amount of exposure to the language. In addition to the input received, as also pointed out by some SLA scholars, language production (output)

is also encouraged – e.g., active participation in class, interaction, discussions, group works – as well as language feedback from the lecturers. Besides, a focus on form, which is proper to the ICLHE approach, would encourage learners to produce language more frequently and more accurately. Therefore, the interplay between the input received and the output produced may lead learners to expand their language competence and improve their skills.

As regards the vocabulary knowledge, at the end of the second year, roughly 60% of the respondents perceived an improvement, especially in the technical words related to their field of study. The findings are in line with previous research on EMI which confirmed language gains in the students' vocabulary knowledge (Aguilar and Rodríguez, 2011; Bartik et al., 2012; Arnó-Macià and Mancho-Barés, 2015; Ackerley 2017). As for the medical students, it is likely that improvement occurred firstly because they must express themselves in English every day, understand the course material and interact with peers, teaching and administrative staff in that language; secondly, because they attended an English language course, taught by an EFL teacher, which included general and medical vocabulary goals. Building vocabulary to communicate is a common activity when dealing with a second or foreign language, especially in EMI classes where lecturers do not teach or explain language content and students are the only responsible for their language learning progress. The results find some correlations with the objectives set in the Annual report (Scheda SUA), according to which medical students are encouraged to learn both general and specialized English terminology to cope with the demands of English-mediated education and international work environments. In addition to that, technical words learning can be seen as a way to approach content understanding and thus as an integration of subject and language (Nation, 2001; Costa, 2012).

5.3.1.2 Students' language gains

Two years after the enrollment in *Medicine and Surgery*, the medical students perceived that their skills had improved, especially the receptive ones, as shown by their answers to Q1, Q2 and Q3. Apart from the students' perceptions,

English improvement was also measured by means of two language tests, specifically designed for the medical students. The results were analyzed statistically.

The perception of improvement in the reading skills was confirmed by the students' outcomes in T1 and T2. Indeed, a statistically significant improvement was registered in the students' *reading* mean scores (by 2.02 points - 12.16%) from the beginning of the first year to the end of the second. Instead, one unexpected outcome was the lack of improvement in the *listening* skills. Contrary to the students' perceptions, their listening mean scores in T2 decreased by 0.94 points compared to T1, meaning that they performed worse in T2. Overall, their final mean scores (*listening + reading*) increased by approximately one point at the end of the second year.

These findings corroborated those obtained from Roquet and Pérez-Vidal's longitudinal research (2012) on CLIL and non-CLIL students' language gains. In their study, CLIL students' reading abilities significantly improved more than the listening ones. Similarly, O'Loughlin and Arkoudis's study (2009) on the IELTS outcomes achieved at the end of a period of study in Australia – in an immersion context – reported general improvements in all the abilities, even if noticeable gains were noted in the reading skills.

Nevertheless, the outcomes of this study are partially in line with those showing both listening and reading improvement, as a result of EMI programmes attendance (Dalton Puffer, 2008; Aguilar and Muñoz, 2014) but seem to be consistent with the goals of the degree programme, the medical language course and the activities illustrated in the Annual report (scheda SUA). In fact, especially in the first two years, most of the lectures and exams are theoretical and practical, meaning that students inevitably train their listening skills by attending classes and their reading skills by analyzing medical records, clinical reports and studying in English. In addition, one of the expected outcomes of the medical language course was related to the improvement of listening skills. In fact, students are offered some classes specifically focused on developing their listening abilities, which are necessary to pass the final English language exam.

However, the observed worsening in the listening skills was quite unexpected. Actually, the students are used to spending time attending classes, both in-person and online, and processing spoken inputs produced by one or more speakers. In addition to that, more than half of them perceived some degree of improvement in that language area. This rather contradictory finding may be related to the quality of language they are usually exposed to. While in class most of the listening input comes from non-native speakers, the videos proposed in the language tests were retrieved from the BBC website where high quality standards are usually maintained.

Another reason for this controversial result may be related to the language tests used to measure the students' English improvement within two academic years. The instruments were not standardized language tests since it was decided to create ad-hoc tests to be addressed to medical students and focused on specialized topics. They aimed at measuring the learners' receptive skills in two years, through a variety of contents and tasks. Several steps were followed which included piloting procedures to verify the validity and reliability of the instruments and results. Nonetheless, there might have been some limitations in terms of construct validity and assessment methods, which may have influenced the students' performance and results.

All in all, the students' perception of improvement in the receptive skills was confirmed only by the reading scores, which were statistically significant. However, the significance of the results obtained from the language tests should be ascertained by a larger sample of students. Given the limited number of participants in this experimentation, the slight improvement registered from T1 to T2 may not necessarily represent the rule and may be confined only to this sample. Similarly, the findings of the listening part, which seemed to be predictive of a language worsening, should also be interpreted with caution.

Overall, these results suggest that studying in an English-mediated programme may lead to a certain degree of language improvement, at least in the reading skills and in the vocabulary knowledge. English improvement may also embrace productive skills, especially spoken production which is constantly used to communicate and interact. However, this study has focused on the receptive

skills and has provided evidence of improvement in the area of reading; active abilities were not measured through the language tests but observed from the students' points of view. According to them in fact, their speaking abilities developed as a result of the constant practice and use of the language; on the contrary, fewer language gains were noted in the area of writing as the occasions to concentrate on their writing skills were very limited.

5.3.2 RQ2 sub-question B: is language improvement voluntary or incidental?

In the EMI environment, students are constantly exposed to different forms of language inputs while they are involved in subject-oriented activities. In fact, the rationale behind EMI is that English is used as a medium to teach academic disciplines without any formal language instruction. Notwithstanding the premises, the students' immersion in an EMI context is seen by some scholars as an ideal condition to develop the students' language abilities in a natural and incidental way (Lei and Hu, 2014; Costa, 2012, 2016; Aguilar, 2017; Dearden, 2018; Macaro et al. 2018; Galloway and Ruegg, 2020; Rose et al., 2020). Given a certain amount of language input, there is some evidence to believe that language improvement may take place incidentally, which according to Aguilar (2017: 726) is "expected and due to the exposure but without any specific language learning goal".

Although there is a paucity of studies investigating the issue of students' language improvement in EMI classes, in this study solid evidence has emerged to advocate for some degree of language improvement in EMI classes, which share some features of SLA contexts. In fact, as long as high-quality input is provided to students together with a more active role played by them, ideally by means of producing the language (output), interacting with other people and negotiating the meaning, language gains may be achieved.

The results obtained from this study have shown that the medical students' proficiency slightly improved in two academic years, mainly incidentally. According to their answers to the questionnaires, more than half of them did not put much effort in it, except for their personal habits which included watching movies, listening to podcasts and reading books in English. No formal language teaching

and feedback were provided apart from the medical language course, which according to them was helpful but too short⁵⁸. Therefore, it emerged that further support and extra English hours are needed and expected by EMI medical students. Additional language learning planning should be put in place together with greater effort to achieve better results. To conclude, careful consideration of the students' language needs and more focus on language development might lead to effective language gains and English improvement.

5.3.3 Implications

The participation of the students in this experimentation and their valuable feedback have provided a deeper insight into their English-mediated education and the role played by the language in an EMI context. Generally speaking, their experience in the EMI context observed was positive, as two years after the enrollment most of them did not regret the decision to study through the medium of English and were satisfied with the outcomes achieved and with the intercultural experience.

The results have some practical implications. Firstly, they have confirmed that English has a central role in EMI education; in fact, most of the students' motivations to choose an EMI degree programme are related to the language, both for its linguistic power in society and for the need to develop their language skills. Undoubtedly, strong English proficiency represents a gateway to more international opportunities, both in academia and in the job market, where the common language is almost exclusively English. This may be even more the case for those students who will move abroad once they complete their studies and will work in contexts where the only way to communicate is through English. Especially in the medical field, effective and clear communication is crucial to the patients' health and clinical outcomes. On the contrary, this may not be the case for those future practitioners who will work in their home country through their own language and

⁵⁸ According to the English course syllabus, the students are offered 40 hours of lessons in the first year. Classes are focused on grammar, general and scientific-medical vocabulary, reading and listening comprehension.

will use English for other reasons, such as to access the literature relevant to their specific field, to publish scientific research and to participate in international conferences. In any case, mastering the language seems to have a positive impact on job placement and projects in international environments.

Secondly, this research has demonstrated that students' English proficiency can improve in the EMI setting. In the case of this study, statistically significant language gains were found in the *reading* skills, which developed almost incidentally while the students were engaged in curricular activities. Although some declared that they spend part of their free time reading in English, it may be hypothesized that much of their improvement was facilitated by the constant input given by the course materials and by reading literature and medical records. The medical language course, attended at the beginning of the first year, may have also played an important role in the students' reading skills since the development of passive skills was one of its main goals.

On the contrary, the reasons for the lack of *listening* improvement are not clear. Whilst it is possible that students were not used to a standard native variety of English proposed by the BBC videos and consequently found some difficulties in completing the tasks, it may also be hypothesized that the quality of instruction did not allow them to improve. This might be due either to the lack of "comprehensible input" received, as theorized by Krashen (1985), according to which the learners' improvement is strictly connected to the quality and variety of the input provided, which must be at least one step beyond their current language level. This would mean that our medical lecturers and students had similar language competences which did not allow for any English improvement. Or it might be due to the limited lecturers' English proficiency and language weaknesses (e.g., low accuracy and fluency, strong pronunciation), which hindered students' progress. As suggested by Fung and Macaro (2019), the use of listening strategies, such as selective attention on difficult terms, translation, and summarization, may enhance better comprehension and learning.

Although the issue of lecturers' proficiency has been long debated in the literature on EMI, the English benchmark to teach in an EMI context is still under scrutiny. Each institution establishes its own policies to evaluate their lecturers'

abilities to teach content through English, which include study periods abroad, international conference participations or PhD qualifications obtained in English-speaking countries (Dearden and Macaro, 2016). However, these may not be sufficient to teach content in an additional language and to deal with the students' language needs. As a consequence, practitioner professional development and support systems appear to be necessary, first and foremost as regards their language proficiency, for instance, through specific language requirements to teach, intensive language courses focused on different aspects of English, language experts' support to prepare course materials. Teacher trainings that strengthen the lecturers' pedagogical competencies would also be of help; these could include alternative teaching approaches and facilitatory strategies to deliver content in a foreign language to a multicultural audience and to improve understanding. Especially in spoken interaction, training sessions on the use of metadiscourse patterns could be beneficial to effective knowledge transmission (Doiz and Lasagabaster, 2022). Nevertheless, this study has not specifically focused on the EMI lecturers. These observations arise from the students' perceptions and comments collected from the questionnaires and thus should be interpreted with caution. To develop a full picture of EMI in this medical school, future investigations of the lecturers' points of view and personal experience would be interesting.

Thirdly, the findings have shown that students care about their language skills and want to improve them during their academic studies. Since their satisfaction is pivotal to the success of the degree programme, much attention should be devoted to language in the EMI environment. As already mentioned by some scholars in the field (Mautner, 2005; Coleman, 2006; Campagna, 2008), the academic world has undergone significant changes which have led to the marketization of education. Under these circumstances, the institutions have been working as businesses and the students have been treated as clients, so that their degree of satisfaction has had an impact on the institutional policies and strategic plans. In this light, their language needs and expectations should be considered, even if they would collide with the rationale of EMI, which does not include any reference to language teaching. As a consequence, a shift from EMI to ICLHE, in

which disciplinary content and language are integrated, would be beneficial if language improvement is expected.

Since effective learning happens almost exclusively in class, as the use of English outside the campus is not a common practice among medical students, much space to the language should be given in class. Additional language support could be put in place by providing more English language courses and exams each year, which should concentrate on all the areas of English. Different language classes could be provided according to the students' English entry levels in the first year and to their language gains in the following years. Balanced language classes may contribute to a more tailored English progress and would respect the students' learning pathway. Thus, more language experts and visiting professors could be of help to train and support the students' language proficiency and perhaps assist the practitioners' teaching as well. Besides, the university policies and goals of the programme may be expanded and incorporate training on scientific literacy and expected language outcomes at the end of the *Medicine and Surgery* academic career. This may include language gains in all the skills, since future doctors will need a good command of English in all the abilities to work in international environments. In doing so, both the lecturers and students would be more motivated to work better and put much effort in that direction.

By way of conclusion, it can be argued that English plays a key role in EMI classes, despite most of its definitions minimize it as a mere tool used to teach and learn subject matter. Instead, it is one of the major drivers towards its increasing success, especially as regards its possible development. As a consequence, English proficiency improvement deserves support firstly from the institutions that decide to offer EMI programmes, by means of specific policies and additional language learning outcomes, and from content lecturers and students who should put more conscious effort in achieving those goals. Collaboration among the stakeholders involved and interdisciplinary work between language experts and content specialists could bring numerous benefits to the students' EMI experience and learning outcomes.

Conclusion

The purpose of this longitudinal study was to empirically investigate the role played by English in an EMI medical school in Italy and to observe the students' language experience throughout two academic years. Given the amount of time spent in an English-mediated educational environment, this research set out to determine whether the students' English proficiency improved incidentally while they were engaged in subject-oriented activities. Since the rationale behind EMI does not include any formal language instruction, as English is used as a means to convey content, it was hypothesized that some degree of language improvement might happen incidentally.

The data in this thesis are drawn from a cohort of 100 students enrolled in an EMI medical programme in Italy, over two academic years. To answer the two research questions posed at the beginning of the study, both qualitative and quantitative data were collected by means of three questionnaires and two language tests, designed for the purposes of this research. The data were then analyzed and merged to achieve triangulation and to develop a comprehensive understanding of the phenomenon.

The RQ1 explored the respondents' experience in the EMI setting, starting from their motivations and expectations of the programme, through their answers and comments to three questionnaires administered in two years. The driving forces behind the option for an English-mediated degree revolved around the linguistic global power held by English and the desire to achieve some improvement in language skills at the end of the academic career. Indeed, a major expectation of the programme was to achieve language gains while attending classes in the international and multicultural university campus. After two years, even if they were satisfied with the quality of education, their expectations were only partially met for two main reasons.

Firstly, they were partly dissatisfied with their lecturers' attention to the language but appreciated the lecturers' effort to deliver high quality lectures by repeating and rephrasing unclear concepts and answering to questions both in person and via email, the overall perception was that English remained marginal in

class and exploited for instructional purposes only. Thus, the findings strengthen the idea, already supported by several scholars in EMI, that language proficiency is crucial to successful education. As a matter of fact, much attention should be devoted to the language and to both lecturers' and students' English proficiency by establishing clear language objectives in the curricula, by adopting stricter language benchmarks to learn and teach in EMI settings and by providing support in terms of intensive language schemes and professional teaching plans.

Secondly, the coronavirus outbreak was partially held responsible because it led to sudden changes in the provision of classes. Indeed, it somehow influenced interaction and engagement in class which were much more appreciated in the face-to-face modality in the first year, and their learning pathway. Under these circumstances, the impact of this unpredictable variable could not be measured, but our results may be measured against the final results in 2025 in a follow-up data collection with the same groups of informants, on the completion of their degree programme. In sum, notwithstanding occasional complains, most students were satisfied with the opportunity to study in that EMI medical programme, to regularly meet international peers and practice the language.

The RQ2 focused on the students' English proficiency by considering both their perceptions expressed in the questionnaires and the final scores gained in the two language tests. At the end of the second year, most of the respondents agreed that the four skills had improved even if at different levels. The highest gain perceived was in the reading skills, followed by technical vocabulary and listening. Spoken production, instead, generally improved but, compared to the end of the first year, it decreased, for the reasons related to remote teaching and reduced interaction. Instead, given the amount of course material written in English, the medical language course offered at the beginning of the first year and the live and pre-recorded lectures provided, general receptive skills were surely trained. By contrast, the students stated that the writing skills were the least improved. They confirmed that during the pandemic most of the exams were conducted orally for technical reasons at the expense of written and practical ones.

The quantitative data obtained from the two language tests were analyzed statistically. The Paired-samples t-test run showed a highly statistically significant

improvement in the students' reading skills which confirmed their perceptions. Instead, no language gains were registered in the area of listening even if the results were not fully significant and did not match the students' perceptions and expectations. Overall, the final scores of T1 and T2, which comprised both the reading and listening parts, increased at the end of the second year.

The findings obtained from the data collection provided reliable scientific support to answer the research questions posed at the beginning of this study, even though some limitations were identified. These mostly regarded the time when the research was carried out and the effective number of students involved. First of all, this research focused on two out of six years of *Medicine and Surgery* because of the length of the doctoral programme. Thus, follow-up research in the following years, involving the same students, could provide further insights into the trends emerged in the first two academic years. Moreover, the health emergency somehow limited the data collection during the second term of the students' first year and intermittently in the second. Due to the sudden shift to online lessons, the isolation and the lack of human contacts, it was much more difficult to get the students involved in the project. Although they were sent several follow-up emails and were repeatedly encouraged to participate in the data collection, the number of students who completed the questionnaires and language tests varied widely. While the very first survey (Q1) was undertaken by roughly 90% of the medical students, the response rate decreased to 70% in the second (Q2) and 35% in the last (Q3). The participation in the language tests followed a different trend. In fact, 47 students participated in T1 and 50 in T2. However, since it was necessary to have a homogeneous sample to run inferential statistical tests, those students who took one test only (out of two) were excluded from the analysis, leading to 42 effective participants whose performance was statistically measured.

All in all, the number of students and the time when the research was carried out made these findings less generalizable to all the EMI contexts. As a consequence, more research across different disciplinary sectors and countries may be useful to confirm the trends noted in this study and to make transnational comparisons. Notwithstanding these limitations, this research has contributed to the body of research on EMI which focuses on the students' relationship with the

language and their English proficiency improvement. A few studies have investigated the extent to which language gains occur in the students' learning process in EMI classes but, to our knowledge, none of these focused on the medical field. This study's design and mixed method approach provided a rich dataset reflecting the students' attitudes towards the role of English in EMI classes and their language gains in two years of EMI studies in *Medicine and Surgery* in Italy.

The findings of this research showed that the growing success of EMI programmes is strictly related to the power of English and to its use as a global language in many domains and fields which include the educational one. Indeed, the switch from teaching English as a subject to using it also as the means to deliver discipline-related content is an effective response to the call for the internationalization of higher education. Although the provision of EMI programmes has proved to be a controversial practice and to bring both benefits and drawbacks to the stakeholders involved, its growth is likely to increase even more in the future, as also asserted by Macaro et al., (2018: 68) who maintained that: "it is hard to see anything but further expansion of EMI in HE".

Moreover, this research suggested that studying academic content through English can be beneficial to improving students' language proficiency and confirmed the starting hypothesis which assumed that English might improve incidentally while students are engaged in discipline-oriented activities, as long as a certain amount of input is provided. Thus, lecturers play a key role in the students' language development, even if they are not English specialists and are not asked to explicitly teach the language.

Nevertheless, not only lecturers should be considered responsible for the students' improvement; indeed, the institutions that decide to offer EMI programmes should also give their contribution by taking into account the issues and challenges of EMI and by putting in place additional policies which provide adequate support to both lecturers and students to make the most of the learning experience. This could be achieved by establishing specific English language requirements to teach in EMI classes and by offering professional and training courses which could be of help in dealing with the issues of teaching in international classes. As regards the students, more positive results and language gains may be

achieved by establishing additional language outcomes and by providing extra hours and courses of English throughout the six years of *Medicine and Surgery*.

Overall, greater effort in obtaining long-term goals is necessary from all the stakeholders involved in EMI. In order to make an EMI programme fully successful, the students' learning potential should be supported in the best possible way, by creating an adequate linguistic environment that may transform incidental to conscious and long-term improvement in the mastery of English.

To conclude, given the relevance of English proficiency and its development, the language factor in EMI would be worthy of further investigation in future works which might focus on:

- (1) the role played by the lecturers' input on the students' language development and how incidental learning may become more effective in the EMI environment;
- (2) medical students' language gains in other EMI settings, through comparative research across different countries;
- (3) the comparison between EMI and non-EMI medical students as regards their language improvement and learning outcomes;
- (4) students' language gains in other disciplinary fields through a longitudinal approach that may ideally cover the entire academic career;
- (5) the four skills improvement in EMI classes through language tests to administer along the students' academic pathway.

Appendices

Appendix 1: Questionnaire one (Q1)

Dear students,
this questionnaire is part of a doctoral research in EMI (English-medium instruction) in the *Medicine and Surgery* degree programme, at the *University of Torino*. All the information gathered will be used for scientific purposes only.

Thank you for your collaboration,
Stefania Cicillini

Email address*

Name and Surname and/or ID number

First section:

In the first section you will be asked to provide some personal information.

- 1) **Age**
- 2) **Gender**
Female
Male
- 3) **Nationality**
- 4) **Mother tongue**
Italian
French
Spanish
Other
- 5) **Type of secondary school attended**
technical school
professional school
“liceo”
Other

Second section:

In the second section you will be asked to answer some questions about your linguistic competence.

Follow the CEFR (Common European Framework of References for Languages) reference levels: A1-A2 basic user - beginner; B1-B2 independent user - intermediate; C1-C2 proficient user - advanced.

- 6) **Self-evaluate your knowledge of the following languages according to the CEFR descriptors**
Italian A1 A2 B1 B2 C1 C2 native speaker

English A1 A2 B1 B2 C1 C2 native speaker

7) **If in question n.6 you clicked on "other", please specify**

8) **How long have you studied English?**

less than 5 years
between 5 and 7 years
more than 7 years

9) **Do you study English outside the academic context? If yes, please specify**

10) **Self-evaluate your English skills according to the CEFR descriptors**

Listening	A1	A2	B1	B2	C1	C2
Reading	A1	A2	B1	B2	C1	C2
Spoken Interaction	A1	A2	B1	B2	C1	C2
Written Interaction	A1	A2	B1	B2	C1	C2
Spoken Production	A1	A2	B1	B2	C1	C2
Written Production	A1	A2	B1	B2	C1	C2

11) **If you have any international linguistic certification, please specify which one**

IELTS
TOEFL
Cambridge
Other

12) **Please specify the score or the level reached (if applicable). If you don't have any certification, please skip the question**

13) **At school, have you ever studied any subject in English (CLIL)?**

Yes
No

14) **If in n.15 you answered yes, please list the subjects**

Third section:

In the third and last section you will be asked to answer some questions about your experience studying in English.

15) **Why did you decide to study in English?**

Because English is the international language
to improve my English skills
to meet international students
to have easier access to international publications
to continue my studies abroad
to have more job opportunities in the future

to work abroad in the future
Other

16) Which level of English do you think EMI lecturers should have?
A1 A2 B1 B2 C1 C2 English native speaker

17) Do you expect your English proficiency to improve?
Yes
No
I don't know

18) Which language do you usually use to talk to your classmates?
English
Italian
I codeswitch between English and Italian according to the context
Other

19) Which language do you usually use to speak to your lecturers?
English
Italian
I codeswitch between English and Italian according to the context
Other

20) According to your experience, how easy or difficult are the following tasks?
very easy (5) easy (4) neutral (3) difficult (2) very difficult (1)

Follow an EMI class
Read the course material in English
Understand the specialized vocabulary in English
Take notes in English
Interact with the lecturer in English
Interact with classmates in English

Appendix 2: Questionnaire two (Q2)

Dear students,
this questionnaire is part of a doctoral research in EMI (English-medium instruction) in the *Medicine and Surgery* degree programme, at the *University of Torino*. All the information gathered will be used for scientific purposes only.
Reflect on your first year (2019/2020) and on your expectations of the new academic year 2020/21.

Thank you for your collaboration,
Stefania Cicillini

Email address *

First section:

1) How satisfied are you with your first academic year (2019/2020)?

- Extremely satisfied
 - Very satisfied
 - Moderately satisfied
 - Slightly satisfied
 - Not satisfied at all
- Can you explain why?**

2) Have your expectations been met?

- Yes
 - No
 - Partially
- Can you explain why?**

3) How satisfied are you with the quality of education?

- Extremely satisfied
 - Very satisfied
 - Moderately satisfied
 - Slightly satisfied
 - Not satisfied at all
- Can you explain why?**

Second section:

4) According to your experience, was it difficult to learn medical subjects in English?

- Yes
 - No
 - Other
- Can you say something more?**

5) Have your English skills improved?

- Yes
- No
- I don't know

Can you explain why?

6) If so, which of the following English skills have improved?

- Listening
- Reading
- Spoken Interaction
- Written Interaction
- Spoken Production
- Written Production

Can you explain why?

7) Which language did you use to take the exams?

- English only
- Italian only
- Both

Please provide more details

8) Did you study English outside the academic context during your first year?

- Yes
- No

If yes, please specify

9) Which language do you use to talk to your classmates?

- English
- Italian
- I codeswitch between English and Italian according to the context
- Other

10) Which language do you usually use to speak to your lecturers?

- English
- Italian
- I codeswitch between English and Italian according to the context
- Other

11) Which level of English do you think your lecturers should have?

- A1
- A2
- B1
- B2
- C1
- C2
- English native speaker

12) Which language would you like to use during the internship in the third year?

- English
- Italian
- Both

13) Which of the following Italian skills have you improved? (For international students only)

- Listening
- Reading
- Spoken Interaction
- Written Interaction
- Spoken Production
- Written Production
- I don't think my skills improved
- I don't know

Third section:

14) In your degree programme, exams are

- Only written
- Only oral
- Only practical
- Mixed (written/oral/practical)
- Mixed (written and oral)

Please specify

15) How many exams are planned in the first year?

16) How many exams have you passed so far?

17) Did you enjoy the intercultural environment in class?

- Yes
- No

18) Did you face any problem related to intercultural aspects?

- Yes
- No

If so, can you give more details?

19) How is the quality of interaction with your lecturers?

- Excellent
- Very good
- Fair
- Poor
- Very poor

Can you explain why?

20) How is the quality of interaction with your classmates?

- Excellent
- Very good
- Fair
- Poor
- Very poor

Can you explain why?

21) According to your experience, how easy or difficult are the following tasks?

very easy easy neutral difficult very difficult

- Follow an EMI class
- Read the course material in English
- Understand the specialized vocabulary in English
- Take notes in English
- Interact with the lecturer in English
- Interact with classmates in English

22) In your opinion, has the coronavirus emergency negatively affected your learning progress?

- Yes
- No

Partially

Can you elaborate more?

23) During the coronavirus emergency, did you experience any of the following?

More than one answer is possible.

- I had problems with the internet connection
- I didn't know how to use the digital tools
- I went back to my home country/region/town
- I had problems due to my time zone
- I didn't have a personal computer
- I studied through my mobile phone
- I didn't have my books with me
- I couldn't get in contact with patients
- I couldn't get in contact with my lecturers
- The quality of the recorded lessons was limited
- The quality of interaction was limited
- I felt embarrassed to interact online
- Online classes were boring

24) According to your experience, would you suggest any good practices to improve the quality of education?

25) Would you like to add further comments?

Appendix 3: Questionnaire three (Q3)

Dear students,
this questionnaire is part of a doctoral research on EMI (English-medium instruction) in the *Medicine and Surgery* degree programme, at the *University of Torino*. All the information gathered will be used for scientific purposes only.
Reflect on your second year (2020/2021).

Thank you for your collaboration,
Stefania Cicillini

Email address *

First section:

Think about your personal experience studying in an EMI context.

1) How satisfied are you with your second academic year (2020/2021)?

Extremely satisfied

Very satisfied

Moderately satisfied

Slightly satisfied

Not satisfied at all

Can you explain why?

2) Have your expectations been met?

Yes

No

Partially

Can you explain why?

3) How difficult was it to attend classes in English?

Very easy

Easy

Neutral

Difficult

Very difficult

Can you say something more?

4) Which language did you use to take the exams?

English only

Italian only

Both

Can you say something more?

5) Which language do you use to talk to your classmates?

English

Italian

Other

6) Which language do you usually use to speak to your lecturers?

English

Italian

Other

7) According to your experience, how easy or difficult are the following activities?

very easy (5) easy (4) neutral (3) difficult (2) very difficult (1)

- Follow an EMI class
- Read the course material in English
- Understand the specialized vocabulary in English
- Take notes in English
- Interact with the lecturer in English
- Interact with classmates in English

Second section:

Reflect on your language skills and experience.

8) Self-evaluate your English skills according to the CEFR descriptors:

Listening	A1	A2	B1	B2	C1	C2
Reading	A1	A2	B1	B2	C1	C2
Spoken Interaction	A1	A2	B1	B2	C1	C2
Written Interaction	A1	A2	B1	B2	C1	C2
Spoken Production	A1	A2	B1	B2	C1	C2
Written Production	A1	A2	B1	B2	C1	C2

9) Have your English skills improved?

- Yes
 - No
 - I don't know
- Can you explain why?**

10) If so, which of the following English skills have you improved?

- Listening
 - Reading
 - Spoken Interaction
 - Written Interaction
 - Spoken Production
 - Written Production
 - Vocabulary
 - None
- Can you explain why?**

11) According to your experience, has your English competence improved voluntarily or incidentally?

12) Please choose the options that have mostly characterized your language experience over the last 2 years:

- I usually ask my professors for language clarifications
- I usually ask my English language teacher for language clarifications
- I usually ask my classmates for language clarifications
- I usually ask questions in class when I do not understand
- I usually use dictionaries when I am not sure about the pronunciation of words
- I usually use grammar books when I have some linguistic doubts
- I usually translate into my mother tongue to understand the course material
- I take private English lessons
- I read books and magazines in English
- I use English outside the academic context
- I listen to the radio and podcasts in English
- I watch movies and TV series in English
- Other

13) Is language support provided to the students?

- Yes
- No

Please provide examples

14) What is the lecturers' English competence like?

- Generally very high
- Generally high
- Generally neutral
- Generally low
- Generally very low

Any comments?

15) Which level of English do you think EMI lecturers should have?

- A1 A2 B1 B2 C1 C2 English native speaker

16) What is the students' English competence like?

- Generally very high
- Generally high
- Generally neutral
- Generally low
- Generally very low

17) Which level of English do you think your classmates should have?

- A1 A2 B1 B2 C1 C2

18) Has the coronavirus emergency negatively affected your English language development?

- Yes
- No
- Partially

Can you elaborate more?

19) After two academic years, would you prefer studying through your mother tongue?

- Yes
- No

Can you explain why?

20) Would you like to add further comments?

Appendix 4: Pilot test one (PT1)

Reading comprehension (PT1)

Read the text carefully. It is divided into 9 paragraphs.
You will have 45 minutes to complete your answers.

M E D I C I N E

How to Kill HIV: Target Its “Influencers”

Applying network theory to HIV’s structure has revealed the most valuable—and vulnerable—parts of the virus

By A. Mandavilli

(17) In just about any system or group, elements with a larger number of connections tend to have more influence than others. Think of Instagram “influencers,” for example—or the chief executive officers of companies. Even within a virus, some structural components—in this case, parts of proteins—have more links to one another than others do. And coaching the immune system to recognize and destroy such influencers is an efficient way to kill HIV, suggests a new study published in May in *Science*.

(18) There has been a lot of **excitement** in the HIV field following the news in March that a second person, often called the “London patient,” was cured after a bone marrow transplant. The donor carried a mutation that makes people naturally resistant to HIV; in effect, the procedure replaced the patient’s immune system with a new, resistant one. But bone marrow transplants are risky and invasive, and many experts believe a practical cure for the **roughly** 37 million HIV-infected people worldwide is more likely to come from smart molecular work. Most HIV-cure research has so far focused on reinforcing a person’s immune system. The new study turns that approach on its head by looking for the most critical parts of the virus itself.

(19) For the new study, the researchers focused on “elite controllers”—people whose bodies control the virus without the aid of any drugs, and who are estimated to number about one in every 300 infected individuals. It made sense that investigating how their immune systems kill HIV might point the way to a cure, says Bruce Walker, senior author of the paper and director of the Ragon Institute of Massachusetts General Hospital, the Massachusetts Institute of Technology and Harvard University. “There are not two people who are cured of HIV infection, in my view,” Walker says. “There are thousands—and a lot of them who control [the virus] on their own. We, as a field, need **to pursue** this with the highest priority.”

(20) Walker and his colleagues found that elite controllers’ immune systems target the most influential regions in the virus. The researchers made this discovery by applying network theory, a type of analysis frequently used in mathematics to chart relationships between objects. They employed the theory to map connections between amino acids, the building blocks of proteins, in three-dimensional molecular structures of HIV

proteins. (They used the 3-D structures because two amino acids that appear far apart in a protein's linear sequence may be much closer—and connected—in three dimensions.)

(21) The researchers found that some amino acids tend to have numerous branchlike structures that cause them to interact with many other amino acids. These branched amino acids have a high “network score,” Walker says, and are thus the most important to HIV's integrity. HIV can mutate in a defensive response to a drug that targets a specific part of its structure. But the amino acids with high network scores are so important that the virus cannot vary them without great cost to itself: if those amino acids change, the connections are lost.

(22) “If you take a highly networked [amino acid] and mutate it, the virus basically falls apart,” Walker says. “It dramatically loses fitness.” This finding makes such amino acids attractive targets for therapy, because attacking them puts the virus in a **lose-lose** situation: it ends up destroyed whether it mutates or not. Walker's team found that elite controllers' immune systems tend to selectively target these influencer amino acids; in most other infected people, immune systems instead mount futile attacks on other, less important parts of the virus.

(23) The new research may also resolve some previously inconsistent findings about an immune molecule called B*57—which has been suggested as a magic weapon that elite controllers wield against HIV. B*57 is a subtype of molecules called human leukocyte antigens (HLAs), which make up a key part of the immune system. HLAs carry fragments of viruses to an infected cell's surface so that killer immune cells circulating in the blood can recognize the flagged cell as infected and destroy both that cell and the virus within it. There are thousands of HLA types, some more common than others, and some better at controlling certain infections. Among these, B*57 is thought to be particularly potent against HIV. But scientists have been puzzled by the fact that not everyone with B*57 is an elite controller—nor do all elite controllers carry B*57. The molecule B*57 “is the **major** determinant of progression or nonprogression [of HIV infection], but it's not totally flawless”, McMichael says, adding that the new paper “goes some way toward explaining why that may be.”

(24) Walker and others have studied elite controllers for decades. One such patient, Loreen Willenberg, now 65 years old, was diagnosed in 1992 and has since donated hundreds of samples for research. Willenberg, who says she has “an amazing immune system,” is invulnerable to dozens of pathogens, including HIV. Tests that measure her immune response to HIV still come back positive, but no test can detect the virus itself. “I've never measured a viral load, ever. It's always been undetectable,” Willenberg says. Walker has studied Willenberg for about 15 years. But this time, instead of focusing on the aspects of her genetics that protect her from HIV, the team **homed in** on which parts of HIV her system attacks. The study explains what makes her immune system so remarkable: it selectively attacks the amino acids with the highest network scores.

(25) With this confirmation of the importance of these influential amino acids, Walker says he hopes to develop a “therapeutic vaccine” that can be given to people already infected with HIV. The vaccine would contain about 30 of the viral parts with the

highest network scores. The hope is that it would prime an infected person's immune system to recognize and then go after these key targets and destroy the virus.

Reading comprehension: 25 questions (PT1)

Read the text and answer the questions. You will have 30 minutes to complete your answers.

- 10 Multiple choice (4-option multiple choice) – read the text and for the questions 1 – 10 choose the answers A, B, C or D.

1) The study published in May in *Science* states that:

- A the immune system protects the body from harmful influences in the environment.
- B a way to kill HIV is to detect and destroy some structural components inside the immune system.
- C in the immune system there are different viruses.
- D a way to kill HIV may be to destroy some influencers that are in the immune system.

2) In paragraph 2, the expression “turns that approach on its head” means:

- A to refuse an offer or request.
- B to improve after a difficult period.
- C to do something well, despite having no experience of it.
- D to innovate in an unexpected way.

3) The author of the paper thinks that:

- A the elite controllers know the cure for the virus.
- B they should investigate how elite controllers' immune system controls the virus.
- C there are thousands of people who have the highest priority.
- D they should investigate approximately 300 infected individuals.

4) Why did they use the network theory?

- A because they believed in mathematical rules.
- B because they wanted to find the different parts of the virus.
- C because they wanted to control the three dimensions.
- D because they wanted to outline the connections of HIV proteins and their components.

5) In the article, Walter states that:

- A if the amino acids changed, they would lose their connections.
- B if the amino acids changed, they will lose their connections.
- C if the amino acids will change, they would lose their connections.
- D if the amino acids change, they would lost their connections.

6) The author's team found out that:

- A amino acids with a high network score should be destroyed.
- B amino acids are more attractive than the virus.
- C C all the amino acids will be destroyed by a good therapy.
- D the virus may be destroyed by a good therapy.

7) The scientists:

- A are convinced that not everyone with B*57 is an elite controller.
- B are sure that everyone with B*57 may be an elite controller.
- C are not sure if everyone with B*57 is an elite controller.
- D don't believe that elite controllers have B*57.

8) Walker and his team:

- A are not studying Loreen Willenberg anymore.
- B will study Loreen Willenberg for 15 years.
- C has studied Loreen Willenberg for 15 years.
- D are still studying Loreen Willenberg.

9) The therapeutic vaccine:

- A will destroy the virus.
- B may destroy the virus.
- C won't destroy the virus.
- D must destroy the virus.

10) The article states that a vaccine

- A may be developed from Walker.
- B may be developed by Walker.
- C is developed by Walker.
- D is developed from Walker.

- 6 Multiple choice (4-option multiple choice) – for questions 11 – 16, read the text and decide which word (A, B, C or D) would best substitute the terms in **bold (in the text)**.

11) excitement (paragraph 2):

- A pleasure
- B enthusiasm
- C ferment
- D happiness

12) roughly (paragraph 2):

- A abruptly
- B precisely
- C barely
- D approximately

13) to pursue (paragraph 3):

- A to follow
- B to look for
- C to observe
- D to make

14) lose-lose (paragraph 6):

- A inferior
- B disadvantageous
- C dominant
- D unconventional

15) major (paragraph 7):

- A main
- B biggest
- C largest
- D more serious

16) homed in (paragraph 8):

- A recognized
- B aimed
- C underlined
- D focused

- 9 Multiple matching – read the text and choose the right heading (A-K) for each paragraph (17 – 25). There are two extra headings you do not need. Headings (11): there are two extra headings you do not need.

A) Destroying B*57
B) A useless vaccine

C) How to destroy HIV
D) Managing the virus
E) How the immune system works in different kinds of people
F) New positive episodes in the HIV field
G) A great immune system
H) Future intentions
I) The network theory
J) What the team discovered
K) A molecule against HIV

17	18	19	20	21	22	23	24	25
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Listening comprehension: 35 questions (PT1)

The video you are going to watch is a BBC Horizons documentary about advances in medical technology.

You will see the video twice. You will have 30 minutes to complete your answers.

Part 1 of the video

Between 1950 and 2000 the number of people over (1) tripled and by the year (2) it will triple again. By this date life expectancy is expected to exceed (3) years.

4) What are they doing in a lab at Cornell University, New York State?

- A) They are trying to set the boundaries to live forever.
- B) They are growing human organs outside the body.
- C) They are setting the boundaries of medical knowledge and life expectancy.

- Three-dimensional bio-printing is a promising technique of bio-engineering, the goal is to print out...

5) 6) 7) using the patients' own (8).....

9) What could become “a thing of the past”?

- A) Donor waiting lists.
- B) Tissue engineering.
- C) Human organs.

10) Why wouldn't implants be rejected by the human body?

- A) Because surgeons and doctors know how to place implants.
- B) Because they aren't easy to print.
- C) Because they are human tissue.

More complex organs like (11)..... (12) could be in operating rooms within (13)..... years.

TRUE or FALSE? (write T or F in the space)

- 14) It can replace traditional surgery. T F
- 15) There is a limited number of shapes that the printer can handle. T F
- 16) It takes 7 weeks to grow a new ear. T F
- 17) The skin grows over the implanted ear. T F
- 18) Implants have already been used on humans. T F

Part 2 of the video

19) Who was the “ekso” device originally produced for and why?

- A) For the skeleton/ to help soldiers.

- B) For the military/ to give soldiers superhuman strength.
- C) For commercial use/ to give soldiers strength.

20) How can it help paralyzed people?

- A) It helps people be more active.
- B) It helps the patients' skeleton.
- C) It lets paralyzed people stand and walk.

- Eythor Bender describes the equipment: *“First of all, 4 motors for the 21)..... and the 22) and then we have 23)sensors embedded in different parts of the robot.”*

24) What happened to Jason?

- A) He had a bicycle accident.
- B) He had a motorcycle accident.
- C) He was immobilized.

25) For Karen, what is “a wonderful experience”?

- A) To look down at him.
- B) To hug him.
- C) To look after him.

26) Ekso Bionics CEO thinks that the use of this device:

- A) is a future plan.
- B) is an amazing experience.
- C) is a real project.

27) After Amanda’s accident, what did she make a “conscious effort” to do?

- A) to delete “hope” from her vocabulary.
- B) to accept her wheelchair life.
- C) to walk independently.

- Amanda describes the feeling:

“It’s fantastic ...look, I’m 28)..... 29)..... 30)..... you are. Imagine for the first time, if you 31)..... up out of that chair, what that would feel like. That’s why I can hardly put 32)..... behind it because - you know - to feel my body 33)..... 34) those motions.

35) What are Ekso Bionics’ plans for the future?

- A) Sell more entire bionic suits.
- B) Make the suits smaller, more streamlined “affordable for the masses within 10 years.”
- C) Let people use the bionic suits by late 2015.

Appendix 5: Pilot test two (PT2)

Reading comprehension (PT2)

*Read the text carefully. It is divided into 9 paragraphs.
You will have 45 minutes to complete your answers.*

Will COVID Force Public Health to Confront America's Epic Inequality?

In California's San Joaquin Valley, some researchers are turning political to address the social determinants of health

Paragraph 1

(17) On a **hazy** day in November, Hardeep Singh received a text message from the COVID-19 testing system at Foster Farms poultry company saying that his mother had tested positive for the coronavirus. He got the alert because his mother, a 63-year-old line worker at one of the company's meat-packing plants in California's San Joaquin Valley, doesn't speak English and doesn't own a smartphone. Singh couldn't reach her as she continued **to handle** chicken parts alongside her co-workers. Her supervisors didn't tell her, either. In fact, they assigned her more shifts for the week. Singh broke the news to her that evening, and convinced her not to return to work, where she might spread the infection to others. But he couldn't reach anyone at the company for another five days, to ask whether she qualified for paid time off while she isolated.

Paragraph 2

(18) Singh's mother ended up being among the more than 400 employees at the plant who were diagnosed with COVID-19 last year, and one of about 90,000 cases linked to food-production facilities and farm work across the United States. Because the sector feeds Americans and powers part of the US economy, agricultural workers such as Singh's mother have been considered essential workers during the COVID-19 pandemic. That important role comes at a cost. One study found that food and agricultural workers in California had an almost 40% increased risk of dying last year, compared with the state's general population. And within that imbalance lies another contrast. Latinx food and agriculture workers experienced a nearly 60% increase in deaths compared with previous years; the increase for white workers was just 16%.

Paragraph 3

(19) The reasons for such disparities, say public-health researchers, include discrimination, low **wages**, limited labour protections and inadequate access to health care, affordable housing and education. These are some of the 'social determinants of health', a concept that has been around for at least 150 years, but which has gained recognition during the pandemic. To understand what makes confronting the social determinants of health so hard, I investigated the tumultuous coronavirus response in the San Joaquin Valley, where hundreds of thousands of agriculture workers reside. Most of them were born outside the United States, and many lack legal residency, meaning they have limited access to social services, such as unemployment benefits or health care, despite paying taxes. The valley is one of the richest agricultural regions in the world, and simultaneously has one of the highest poverty rates in the United States. During the pandemic, it has provided a clear

example of how inequality renders some groups of people much more vulnerable to disease.

Paragraph 4

(20) Mary Bassett, an epidemiologist at Harvard University in Cambridge, Massachusetts and an author on the *Lancet* report says: “We had every reason to prepare ourselves for a bad epidemic when COVID reached us because this country is full of holes.” She lists several: it lacks universal health coverage and **mandatory** paid sick leave; it has a minimum wage that is below a living wage; and it relies on an immigrant workforce, many of whom lack legal status.

Paragraph 5

(21) “The department of health is as strong as the board of supervisors allows it to be,” Arias explains. Similar power dynamics played out across the United States and were exacerbated by protests against coronavirus measures. At least 181 public-health officials resigned, retired or were fired last year, and many of them had faced **harassment** from the public for doing their jobs, according to an investigation by Kaiser Health News and the Associated Press. Arias, too, was threatened. He and other city-council members pushed the board to expand testing on farms, and couple it with paid sick leave. But his confrontational approach got him into trouble. “One of the supervisors said to me, ‘Stay in your lane—we aren’t going to disrupt the agriculture industry at the peak of harvest’,” he recalls. On another occasion, men associated with the Proud Boys, a violent, far-right organization, showed up at Arias’s home to confront him.

Paragraph 6

(22) He explains that people of colour with COVID-19 were often the “sickest of the sickest” patients that he treated at the university hospital. A key problem contributing to higher death rates in this group is that they delay seeking help because they don’t have health insurance, can’t afford medical bills or fear doctors in the United States, he says. “A lot of them don’t trust the medical community, and I don’t blame them in some respects because historically they haven’t been treated well.”

Paragraph 7

(23) Still, a century of neglect isn’t easily undone. Sparse neighbourhoods along the rural roads of the San Joaquin Valley can be traced back to temporary housing tracts built for migrant workers in the 1930s. Today, some of these towns don’t have safe drinking water or a single clinic. And the city of Fresno itself is sharply divided. Predominantly Black, Latinx and Asian neighbourhoods are in the south of the city. These sections were shaded red on maps from the 1930s, indicating areas with large, non-white populations where banks were discouraged from issuing home loans. This practice, known as redlining, pushed down property values in the areas, and helped to reinforce racial segregation and inequality. Although lawmakers attempted to mitigate the discriminatory practice in the 1960s, parts of south Fresno still have limited access to parks, Internet services, healthy food and other benefits.

Paragraph 8

(24) According to the Central Valley Health Policy Institute, a child born in a wealthy neighbourhood in northern Fresno is expected to live past the age of 80—more than 10

years longer than a child born in parts of south Fresno, and 20 years longer than a child in rural neighbourhoods in the San Joaquin Valley, where average life expectancy is similar to that for many low-income countries.

Southwest Fresno is where Guadalupe Lopez lives with her husband and three children in a rented mobile home without drinkable tap water. By the time she connected with a community group serving Indigenous people from Mexico—*Centro Binacional para el Desarrollo Indígena Oaxaqueño*—she was facing **eviction** and eating barely a tortilla a day.

Paragraph 9

(25) Singh’s mother lives that reality. Two weeks before she tested positive for the coronavirus at the Foster Farms meat-packing plant, she told her son that 140 people at work might have COVID-19. The factory floor looked emptier, she told him, and a flyer in English on the notice board included the number 140. Singh didn’t know what to make of his mother’s fears. “I feel like everyone I know at Foster Farms speaks Spanish, Hmong and Punjabi, and like very few speak English,” he explains. He told his mother to ask a co-worker with a smartphone to photograph the sign and send it to him to read. But her colleague refused because she didn’t want to get into trouble. A couple of days later, she said the sign had disappeared—but the outbreak was silently growing larger. In December, the United Farm Workers of America union sued Foster Farms on behalf of several employees from a plant in Livingston, alleging that “Foster Farms has failed to take the necessary safety precautions to prevent the spread of COVID-19”.

Reading comprehension: 25 questions (PT2)

Read the text and answer the questions. You will have 30 minutes to complete your answers.

- 10 Multiple choice (4-option multiple choice) – read the text and for the questions 1 – 10 choose the answers A, B, C or D.

1) The article reports:

- A) bad public insurance in America
- B) black people discrimination
- C) bad working conditions in Latin America
- D) social and health inequalities in the United States

2) During the COVID-19 pandemic

- A) 40% of American workers almost died
- B) 16% of white workers died
- C) Latinx workers had an approximately 60% rise in deaths
- D) the rate of unemployment in the agriculture field increased

3) The article states that:

- A) San Joaquin Valley, who is in California, has one of the highest poverty rates in the US
- B) San Joaquin Valley, that is in California, has one of the highest poverty rates in the US
- C) San Joaquin Valley, whom is in California, has one of the highest poverty rates in the US
- D) San Joaquin Valley, is in California, has one of the highest poverty rates in the US

4) Basset, an author on the Lancet reports,

- A) claims that workers could have had universal health insurance
- B) thinks that they should have been prepared for the pandemic

- C) complains about working safety
- D) states that America might provide higher wages

5) People of colour

- A) are believed to be the sickest patients treated at the university hospital
- B) are confirmed to being the sickest patients treated at the university hospital
- C) are thought to being the sickest patients treated at the university hospital
- D) are claimed to have been the sickest patients treated at the university hospital

6) During the COVID-19 outbreak,

- A) some public-health officials were fired because of protests against coronavirus measures
- B) Arias and his colleagues tried to increase testing on farms
- C) some city-council representatives were threatened by a violent organization
- D) the board of supervisors neglected its duties

7) In San Joaquin Valley

- A) no white people live there
- B) living conditions used to be very poor
- C) people still struggle to get bank loans
- D) discrimination dates back to the beginning of the 21th century

8) People living in southern Fresno

- A) would have lived better if racial segregation and inequality hadn't existed.
- B) would have lived better if racial segregation and inequality couldn't had existed.
- C) would lived better if racial segregation and inequality hadn't existed.
- D) would live better if racial segregation and inequality couldn't existed.

9) The Foster Farms was sued by

- A) the workers
- B) a civil rights organization
- C) Singh's mother
- D) the employers

10) Singh's mother

- A) will have be taking legal action against the Foster Farms
- B) may have taken legal action against the Foster Farms
- C) will have taken legal action against the Foster Farms
- D) should have taken legal action against the Foster Farms

- 6 Multiple choice (4-option multiple choice) – for questions 11 – 16, read the text and decide which word (A, B, C or D) would best substitute the terms in **bold (in the text)**.

11) hazy (paragraph 1):

- A) cloudy
- B) breezy
- C) foggy
- D) rainy

12) to handle (paragraph 1)

- A) to feed
- B) to sell
- C) to take
- D) to cut

13) wage (paragraph 3)

- A) reduced working space
- B) money paid to employees
- C) time off
- D) sick leave

14) mandatory (paragraph 4)

- A) compulsory

- B) voluntary
- C) optional
- D) extended

15) harassment (paragraph 5)

- A) behavior that upsets someone
- B) feeling that people get when something unfair, painful, or bad happens
- C) a situation in which there is no fairness and justice
- D) the crime of stealing from somewhere or someone

16) eviction (paragraph 8)

- A) anything used or acting to block someone from going somewhere or from doing something
- B) something that needs great mental or physical effort in order to be done successfully
- C) a situation in which a difficult choice has to be made between two different things
- D) the act of forcing someone to leave something, especially their home

- 9 Multiple matching – read the text and choose the right heading (A-K) for each paragraph (17 – 25). There are two extra headings you do not need. Headings (11): there are two extra headings you do not need.

17	18	19	20	21	22	23	24	25
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A) Pandemics hits the agricultural field
B) People of colour
C) Discriminated areas
D) Life after COVID-19 pandemics
E) A long history of inequalities
F) Equity
G) Dollars first
H) Fresno’s geographic division
I) Loss of public services
J) Positive result
K) Justice is done

Listening Comprehension: 35 questions (PT2)

The video you are going to watch is part of a BBC World News Horizons, “Cost-conscious science” documentary about low-cost medical technology.

You will see the video twice. You will have 25 minutes to complete your answers (filling the gaps, true or false and multiple choice).

First part of the video:

.....(1) can be very expensive and if you are poor or you live in a (2) part of the world your access to it can be almost non-existent.

The aim of the D.I.Y medical technology lab at MIT

“ ..is to make medical science (3) and therefore much more widely (4)..... but without (5)..... any of the (6)”

7) According to Jose Gomez-Marquez, the MIT researcher, medical fabrication relies on who at the moment?

- A) professional medical designers
- B) professional engineers
- C) professional expert

8) What other types of people should be included and involved in this field?

- A) physicians
- B) kids and parents
- C) non-experts

9) What are the green "grabber" toy and the Lego structure examples of?

- A) syringe pumps
- B) gear sets
- C) medical therapies

10) Why are nebulizers of particular importance in developing countries?

- A) because they can deliver large quantities of oxygen
- B) because they can save people’s lives without the use of electricity
- C) because they can be used for any disease

11) What nebulizer innovation does the DIY lab offer?

- A) Nebulizers can be also used by kids
- B) Nebulizers can be repaired easily
- C) People can make their own nebulizers

12) What goal does Jose Gomez-Marquez hope to achieve over the next 10 years?

- A) Solve respiratory issues easily
- B) Make medicines similar to toys
- C) Provide medical care to everybody

TRUE or FALSE? (write T or F in the space)

13) The main aim of the team is to make medical devices easier and cheaper. T F

14) The main causes of respiratory issues in developing countries are dust and indoor cooking. T F

Second part of the video:

According to Erin O'Donohue of "Embrace":

how many babies die every year within the first month of their lives (15)

how many infants die in the first day in the world: (16)

how many infants die in the first few weeks : (17)

main cause of death: (18)..... (19)..... (20)

such as (21)..... (22)

When a child is born, they lack the (23) (24)

25) Why do 98% of newborn deaths occur in developing countries?

- A) because new borns are fat
- B) because there is a lack of resources
- C) because incubators don't work properly

26) What does the "Embrace Infant Warmer" use to keep the baby warm?

- A) a sleeping bag that maintains high temperatures
- B) an electric sleeping bag
- C) a sleeping bag that the baby uses up to fifty times

27) What is the key advantage of a sleeping bag?

- A) It's thick.
- B) It's priceless.
- C) It's accessible.

28) Erin O'Donohue says that:

- A) she has invented a new technology
- B) sleeping bags are addressed to children living in developing countries only
- C) many preventable deaths are linked to hypothermia

TRUE or FALSE? (write T or F in the space)

29) Erin O'Donohue created a low-cost solution to save her child. T F

30) Some people in developing countries sleep next to dangerous stoves and fires. T F

31) The non-profit organization has already delivered 150,000 sleeping bags in the world.
T F

"Erin's idea is about taking an (32) technology and finding a (33) way to use it - it's one idea from one woman but millions of (34) could be changed by its (35)"

Appendix 6: Test one (T1)

Reading comprehension (T1)

Read the text carefully. It is divided into 9 paragraphs.

You will have 45 minutes to complete your answers.

MEDICINE

How to Kill HIV: Target Its “Influencers”

Applying network theory to HIV’s structure has revealed the most valuable—and vulnerable—parts of the virus

By A. Mandavilli

(17) In just about any system or group, elements with a larger number of connections tend to have more influence than others. Think of Instagram “influencers,” for example—or the chief executive officers of companies. Even within a virus, some structural components—in this case, parts of proteins—have more links to one another than others do. And coaching the immune system to recognize and destroy such influencers is an efficient way to kill HIV, suggests a new study published in May in *Science*.

(18) There has been a lot of **excitement** in the HIV field following the news in March that a second person, often called the “London patient,” was cured after a bone marrow transplant. The donor carried a mutation that makes people naturally resistant to HIV; in effect, the procedure replaced the patient’s immune system with a new, resistant one. But bone marrow transplants are risky and invasive, and many experts believe a practical cure for the **roughly** 37 million HIV-infected people worldwide is more likely to come from smart molecular work. Most HIV-cure research has so far focused on reinforcing a person’s immune system. The new study turns that approach on its head by looking for the most critical parts of the virus itself.

(19) For the new study, the researchers focused on “elite controllers”—people whose bodies control the virus without the aid of any drugs, and who are estimated to number about one in every 300 infected individuals. It made sense that investigating how their immune systems kill HIV might point the way to a cure, says Bruce Walker, senior author of the paper and director of the Ragon Institute of Massachusetts General Hospital, the Massachusetts Institute of Technology and Harvard University. “There are not two people who are cured of HIV infection, in my view,” Walker says. “There are thousands—and a lot of them who control [the virus] on their own. We, as a field, need **to pursue** this with the highest priority.”

(20) Walker and his colleagues found that elite controllers’ immune systems target the most influential regions in the virus. The researchers made this discovery by applying network theory, a type of analysis frequently used in mathematics to chart relationships between objects. They employed the theory to map connections between amino acids, the building blocks of proteins, in three-dimensional molecular structures of HIV

proteins. (They used the 3-D structures because two amino acids that appear far apart in a protein's linear sequence may be much closer—and connected—in three dimensions.)

(21) The researchers found that some amino acids tend to have numerous branchlike structures that cause them to interact with many other amino acids. These branched amino acids have a high “network score,” Walker says, and are thus the most important to HIV's integrity. HIV can mutate in a defensive response to a drug that targets a specific part of its structure. But the amino acids with high network scores are so important that the virus cannot vary them without great cost to itself: if those amino acids change, the connections are lost.

(22) “If you take a highly networked [amino acid] and mutate it, the virus basically falls apart,” Walker says. “It dramatically loses fitness.” This finding makes such amino acids attractive targets for therapy, because attacking them puts the virus in a **lose-lose** situation: it ends up destroyed whether it mutates or not. Walker's team found that elite controllers' immune systems tend to selectively target these influencer amino acids; in most other infected people, immune systems instead mount futile attacks on other, less important parts of the virus.

(23) The new research may also resolve some previously inconsistent findings about an immune molecule called B*57—which has been suggested as a magic weapon that elite controllers wield against HIV. B*57 is a subtype of molecules called human leukocyte antigens (HLAs), which make up a key part of the immune system. HLAs carry fragments of viruses to an infected cell's surface so that killer immune cells circulating in the blood can recognize the flagged cell as infected and destroy both that cell and the virus within it. There are thousands of HLA types, some more common than others, and some better at controlling certain infections. Among these, B*57 is thought to be particularly potent against HIV. But scientists have been puzzled by the fact that not everyone with B*57 is an elite controller—nor do all elite controllers carry B*57. The molecule B*57 “is the **major** determinant of progression or nonprogression [of HIV infection], but it's not totally flawless”, McMichael says, adding that the new paper “goes some way toward explaining why that may be.”

(24) Walker and others have studied elite controllers for decades. One such patient, Loreen Willenberg, now 65 years old, was diagnosed in 1992 and has since donated hundreds of samples for research. Willenberg, who says she has “an amazing immune system,” is invulnerable to dozens of pathogens, including HIV. Tests that measure her immune response to HIV still come back positive, but no test can detect the virus itself. “I've never measured a viral load, ever. It's always been undetectable,” Willenberg says. Walker has studied Willenberg for about 15 years. But this time, instead of focusing on the aspects of her genetics that protect her from HIV, the team **homed in** on which parts of HIV her system attacks. The study explains what makes her immune system so remarkable: it selectively attacks the amino acids with the highest network scores.

(25) With this confirmation of the importance of these influential amino acids, Walker says he hopes to develop a “therapeutic vaccine” that can be given to people already infected with HIV. The vaccine would contain about 30 of the viral parts with the

highest network scores. The hope is that it would prime an infected person's immune system to recognize and then go after these key targets and destroy the virus.

Reading comprehension: 25 questions (T1)

Read the text and answer the questions. You will have 30 minutes to complete your answers.

- 10 Multiple choice (4-option multiple choice) – read the text and for the questions 1 – 10 choose the answers A, B, C or D.

1) The study published in May in *Science* states that:

- A the immune system protects the body from harmful influences in the environment.
- B a way to kill HIV is to detect and destroy some structural components inside the immune system.
- C in the immune system there are different viruses.
- D a way to kill HIV may be to destroy some influencers that are in the immune system.

2) In paragraph 2, the expression “turns that approach on its head” means:

- A to refuse an offer or request.
- B to improve after a difficult period.
- C to do something well, despite having no experience of it.
- D to innovate in an unexpected way.

3) The author of the paper thinks that:

- A the elite controllers know the cure for the virus.
- B they should investigate how elite controllers' immune system controls the virus.
- C there are thousands of people who have the highest priority.
- D they should investigate approximately 300 infected individuals.

4) Why did they use the network theory?

- A because they believed in mathematical rules.
- B because they wanted to find the different parts of the virus.
- C because they wanted to control the three dimensions.
- D because they wanted to outline the connections of HIV proteins and their components.

5) In the article, Walter states that:

- A if the amino acids changed, they would lose their connections.
- B if the amino acids changed, they will lose their connections.
- C if the amino acids will change, they would lose their connections.
- D if the amino acids change, they would lost their connections.

6) The author's team found out that:

- A amino acids with a high network score should be destroyed.
- B amino acids are more attractive than the virus.
- C all the amino acids should be destroyed.
- D the virus may be destroyed by a good therapy.

7) The scientists:

- A are convinced that not everyone with B*57 is an elite controller.
- B are sure that everyone with B*57 may be an elite controller.
- C are not sure if everyone with B*57 is an elite controller.
- D don't believe that elite controllers have B*57.

8) Walker and his team:

- A are not studying Loreen Willenberg anymore.
- B will study Loreen Willenberg for 15 years.
- C has studied Loreen Willenberg for 15 years.
- D are still studying Loreen Willenberg.

9) The therapeutic vaccine:

- A will destroy the virus.
- B may destroy the virus.
- C won't destroy the virus.
- D must destroy the virus.

10) The article states that a vaccine

- A may be developed from Walker.
- B may be developed by Walker.
- C is developed by Walker.
- D is developed from Walker.

- 6 Multiple choice (4-option multiple choice) – for questions 11 – 16, read the text and decide which word (A, B, C or D) would best substitute the terms in **bold (in the text)**.

11) excitement (paragraph 2):

- A pleasure
- B enthusiasm
- C ferment
- D happiness

12) roughly (paragraph 2):

- A abruptly
- B precisely
- C barely
- D approximately

13) to pursue (paragraph 3):

- A to follow
- B to look for
- C to observe
- D to make

14) lose-lose (paragraph 6):

- A inferior
- B disadvantageous
- C dominant
- D unconventional

15) major (paragraph 7):

- A main
- B biggest
- C largest
- D more serious

16) homed in (paragraph 8):

- A recognized
- B aimed
- C underlined
- D focused

- 9 Multiple matching – read the text and choose the right heading (A-K) for each paragraph (17 – 25). There are two extra headings you do not need. Headings (11): there are two extra headings you do not need.

A) Destroying B*57
B) A useless vaccine
C) How to destroy HIV

D) Managing the virus
E) How the immune system works in different kinds of people
F) New positive episodes in the HIV field
G) A great immune system
H) Future intentions
I) The network theory
J) What the team discovered
K) A molecule against HIV

17	18	19	20	21	22	23	24	25
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Listening Comprehension: 35 questions (T1)

The video you are going to watch is a BBC Horizons documentary about advances in medical technology.

You will see the video twice. You will have 30 minutes to complete your answers.

Part 1 of the video

Between 1950 and 2000 the number of people over (1) tripled and by the year (2) it will triple again. By this date life expectancy is expected to exceed (3) years.

4) What are they doing in a lab at Cornell University, New York State?

- A) They are trying to set the boundaries to live forever.
- B) They are growing human organs outside the body.
- C) They are setting the boundaries of medical knowledge and life expectancy.

- Three-dimensional bio-printing is a promising technique of bioengineering, the goal is to print out...

5) 6) 7) using the patients' own (8).....

9) What could become “a thing of the past”?

- A) Donor waiting lists.
- B) Tissue engineering.
- C) Human organs.

10) Why wouldn't implants be rejected by the human body?

- A) Because surgeons and doctors know how to place implants.
- B) Because they aren't easy to print.
- C) Because they are human tissue.

More complex organs like (11)..... (12) could be in operating rooms within (13)..... years.

TRUE or FALSE? (write T or F in the space)

- 14) It will replace traditional surgery. T F
- 15) There is a limited number of shapes that the printer can handle. T F
- 16) It takes 7 weeks to grow a new ear. T F
- 17) The skin grows over the implanted ear. T F
- 18) Implants have already been used on humans. T F

Part 2 of the video

19) Who was the “ekso” device originally produced for and why?

- A) For the skeleton/ to help soldiers.
- B) For the military/ to give soldiers superhuman strength.

C) For commercial use/ to give soldiers strength.

20) How can it help paralyzed people?

- A) It helps people be more active.
- B) It helps the patients' skeleton.
- C) It lets paralyzed people stand and walk.

- Eythor Bender describes the equipment: *"First of all, 4 motors for the 21)..... and the 22) and then we have 23)sensors embedded in different parts of the robot."*

24) What happened to Jason?

- A) He had a bicycle accident.
- B) He had a motorcycle accident.
- C) He was immobilized.

25) For Karen, what is "a wonderful experience"?

- A) To look down at him.
- B) To hug him.
- C) To look after him.

26) Ekso Bionics CEO thinks that the use of this device:

- A) is a future plan.
- B) is an amazing experience.
- C) is a real project.

27) After Amanda's accident, what did she make a "conscious effort" to do?

- A) to delete "hope" from her vocabulary.
- B) to accept her wheelchair life.
- C) to walk independently.

- Amanda describes the feeling:

"It's fantastic...look, I'm 28)..... 29)..... 30)..... you are. Imagine for the first time, if you 31)..... up out of that chair, what that would feel like. That's why I can hardly put 32)..... behind it because - you know - to feel my body 33)..... 34) those motions."

35) What are Ekso Bionics' plans for the future?

- A) Sell more entire bionic suits.
- B) Make the suits smaller, more streamlined "affordable for the masses within 10 years."
- C) Let people use the bionic suits by late 2015.

Appendix 7: Test two (T2)

Reading comprehension (T2)

*Read the text carefully. It is divided into 9 paragraphs.
You will have 45 minutes to complete your answers.*

Will COVID Force Public Health to Confront America's Epic Inequality?

In California's San Joaquin Valley, some researchers are turning political to address the social determinants of health

Paragraph 1

(17) On a **hazy** day in November, Hardeep Singh received a text message from the COVID-19 testing system at Foster Farms poultry company saying that his mother had tested positive for the coronavirus. He got the alert because his mother, a 63-year-old line worker at one of the company's meat-packing plants in California's San Joaquin Valley, doesn't speak English and doesn't own a smartphone. Singh couldn't reach her as she continued **to handle** chicken parts alongside her co-workers. Her supervisors didn't tell her, either. In fact, they assigned her more shifts for the week. Singh broke the news to her that evening, and convinced her not to return to work, where she might spread the infection to others. But he couldn't reach anyone at the company for another five days, to ask whether she qualified for paid time off while she isolated.

Paragraph 2

(18) Singh's mother ended up being among the more than 400 employees at the plant who were diagnosed with COVID-19 last year, and one of about 90,000 cases linked to food-production facilities and farm work across the United States. Because the sector feeds Americans and powers part of the US economy, agricultural workers such as Singh's mother have been considered essential workers during the COVID-19 pandemic. That important role comes at a cost. One study found that food and agricultural workers in California had an almost 40% increased risk of dying last year, compared with the state's general population. And within that imbalance lies another contrast. Latinx food and agriculture workers experienced a nearly 60% increase in deaths compared with previous years; the increase for white workers was just 16%.

Paragraph 3

(19) The reasons for such disparities, say public-health researchers, include discrimination, low **wages**, limited labour protections and inadequate access to health care, affordable housing and education. These are some of the 'social determinants of health', a concept that has been around for at least 150 years, but which has gained recognition during the pandemic. To understand what makes confronting the social determinants of health so hard, I investigated the tumultuous coronavirus response in the San Joaquin Valley, where hundreds of thousands of agriculture workers reside. Most of them were born outside the United States, and many lack legal residency, meaning they have limited access to social services, such as unemployment benefits or health care, despite paying taxes. The valley is one of the richest agricultural regions in the world, and simultaneously has one of the highest poverty rates in the United States. During the pandemic, it has provided a clear

example of how inequality renders some groups of people much more vulnerable to disease.

Paragraph 4

(20) Mary Bassett, an epidemiologist at Harvard University in Cambridge, Massachusetts and an author on the *Lancet* report says: “We had every reason to prepare ourselves for a bad epidemic when COVID reached us because this country is full of holes.” She lists several: it lacks universal health coverage and **mandatory** paid sick leave; it has a minimum wage that is below a living wage; and it relies on an immigrant workforce, many of whom lack legal status.

Paragraph 5

(21) “The department of health is as strong as the board of supervisors allows it to be,” Arias explains. Similar power dynamics played out across the United States and were exacerbated by protests against coronavirus measures. At least 181 public-health officials resigned, retired or were fired last year, and many of them had faced **harassment** from the public for doing their jobs, according to an investigation by Kaiser Health News and the Associated Press. Arias, too, was threatened. He and other city-council members pushed the board to expand testing on farms, and couple it with paid sick leave. But his confrontational approach got him into trouble. “One of the supervisors said to me, ‘Stay in your lane—we aren’t going to disrupt the agriculture industry at the peak of harvest’,” he recalls. On another occasion, men associated with the Proud Boys, a violent, far-right organization, showed up at Arias’s home to confront him.

Paragraph 6

(22) He explains that people of colour with COVID-19 were often the “sickest of the sickest” patients that he treated at the university hospital. A key problem contributing to higher death rates in this group is that they delay seeking help because they don’t have health insurance, can’t afford medical bills or fear doctors in the United States, he says. “A lot of them don’t trust the medical community, and I don’t blame them in some respects because historically they haven’t been treated well.”

Paragraph 7

(23) Still, a century of neglect isn’t easily undone. Sparse neighbourhoods along the rural roads of the San Joaquin Valley can be traced back to temporary housing tracts built for migrant workers in the 1930s. Today, some of these towns don’t have safe drinking water or a single clinic. And the city of Fresno itself is sharply divided. Predominantly Black, Latinx and Asian neighbourhoods are in the south of the city. These sections were shaded red on maps from the 1930s, indicating areas with large, non-white populations where banks were discouraged from issuing home loans. This practice, known as redlining, pushed down property values in the areas, and helped to reinforce racial segregation and inequality. Although lawmakers attempted to mitigate the discriminatory practice in the 1960s, parts of south Fresno still have limited access to parks, Internet services, healthy food and other benefits.

Paragraph 8

(24) According to the Central Valley Health Policy Institute, a child born in a wealthy neighbourhood in northern Fresno is expected to live past the age of 80—more than 10

years longer than a child born in parts of south Fresno, and 20 years longer than a child in rural neighbourhoods in the San Joaquin Valley, where average life expectancy is similar to that for many low-income countries.

Southwest Fresno is where Guadalupe Lopez lives with her husband and three children in a rented mobile home without drinkable tap water. By the time she connected with a community group serving Indigenous people from Mexico—*Centro Binacional para el Desarrollo Indígena Oaxaqueño*—she was facing **eviction** and eating barely a tortilla a day.

Paragraph 9

(25) Singh’s mother lives that reality. Two weeks before she tested positive for the coronavirus at the Foster Farms meat-packing plant, she told her son that 140 people at work might have COVID-19. The factory floor looked emptier, she told him, and a flyer in English on the notice board included the number 140. Singh didn’t know what to make of his mother’s fears. “I feel like everyone I know at Foster Farms speaks Spanish, Hmong and Punjabi, and like very few speak English,” he explains. He told his mother to ask a co-worker with a smartphone to photograph the sign and send it to him to read. But her colleague refused because she didn’t want to get into trouble. A couple of days later, she said the sign had disappeared—but the outbreak was silently growing larger. In December, the United Farm Workers of America union sued Foster Farms on behalf of several employees from a plant in Livingston, alleging that “Foster Farms has failed to take the necessary safety precautions to prevent the spread of COVID-19”.

Reading comprehension: 25 questions (T2)

Read the text and answer the questions. You will have 30 minutes to complete your answers.

- 10 Multiple choice (4-option multiple choice) – read the text and for the questions 1 – 10 choose the answers A, B, C or D.

1) The article reports:

- A) bad public insurance in America
- B) black people discrimination
- C) bad working conditions in Latin America
- D) social and health inequalities in the United States

2) During the COVID-19 pandemic

- A) 40% of American workers almost died
- B) 16% of white workers died
- C) Latinx workers had an approximately 60% rise in deaths
- D) the rate of unemployment in the agriculture field increased

3) The article states that:

- A) San Joaquin Valley, who is in California, has one of the highest poverty rates in the US
- B) San Joaquin Valley, that is in California, has one of the highest poverty rates in the US
- C) San Joaquin Valley, whom is in California, has one of the highest poverty rates in the US
- D) San Joaquin Valley, is in California, has one of the highest poverty rates in the US

4) Basset, an author on the Lancet reports,

- A) claims that workers could have had universal health insurance

- B) thinks that they should have been prepared for the pandemic
- C) complains about working safety
- D) states that America might provide higher wages

5) People of colour

- A) are believed to be the sickest patients treated at the university hospital
- B) are confirmed to being the sickest patients treated at the university hospital
- C) are thought to being the sickest patients treated at the university hospital
- D) are called to be the sickest patients treated at the university hospital

6) During the COVID-19 outbreak,

- A) some public-health officials were fired because of protests against coronavirus measures
- B) Arias and his colleagues tried to increase testing on farms
- C) some city-council representatives were threatened by a violent organization
- D) the board of supervisors neglected its duties

7) In San Joaquin Valley

- A) no white people live there
- B) living conditions are terrific
- C) people still struggle to get bank loans
- D) discrimination dates back to the beginning of the 21th century

8) People living in southern Fresno

- A) would have lived better if racial segregation and inequality hadn't existed.
- B) would have lived better if racial segregation and inequality couldn't had existed.
- C) would lived better if racial segregation and inequality hadn't existed.
- D) would live better if racial segregation and inequality couldn't existed.

9) The Foster Farms was sued by

- A) the workers
- B) the clerks
- C) Singh's mother
- D) the employers

10) Singh's mother

- A) will have be taking legal action against the Foster Farms
- B) may have taken legal action against the Foster Farms
- C) will have taken legal action against the Foster Farms
- D) should have taken legal action against the Foster Farms

- 6 Multiple choice (4-option multiple choice) – for questions 11 – 16, read the text and decide which word (A, B, C or D) would best substitute the terms in **bold (in the text)**.

11) hazy (paragraph 1):

- A) cloudy
- B) breezy
- C) foggy
- D) rainy

12) to handle (paragraph 1)

- A) to feed
- B) to sell
- C) to take
- D) to cut

13) wage (paragraph 3)

- A) reduced working space
- B) money paid to employees
- C) time off
- D) sick leave

14) mandatory (paragraph 4)

- A) compulsory
- B) voluntary
- C) optional
- D) extended

15) harassment (paragraph 5)

- A) behavior that upsets someone
- B) being unsuitable or wrong in a certain situation
- C) a situation in which there isn't any injustice
- D) the crime of stealing from somewhere or someone

16) eviction (paragraph 8)

- A) anything used or acting to block someone from going somewhere or from doing something
- B) something that needs great mental or physical effort in order to be done successfully
- C) a situation in which a difficult choice has to be made between two different things
- D) the act of forcing someone to leave something, especially their home

- 9 Multiple matching – read the text and choose the right heading (A-K) for each paragraph (17 – 25). There are two extra headings you do not need. Headings (11): there are two extra headings you do not need.

17	18	19	20	21	22	23	24	25
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A) Pandemics hits the agricultural field
B) People of colour
C) Discriminated areas
D) Life after COVID-19 pandemics
E) A long history of inequalities
F) Equity
G) Dollars first
H) Fresno's geographic division
I) Loss of public services
J) Positive result
K) Justice is done

Listening Comprehension: 35 questions (T2)

The video you are going to watch is part of a BBC World News Horizons, “Cost-conscious science” documentary about low-cost medical technology.

You will see the video twice. You will have 25 minutes to complete your answers (filling the gaps, true or false and multiple choice).

First part of the video:

.....(1) can be very expensive and if you are poor or you live in a (2) part of the world your access to it can be almost non-existent.

The aim of the D.I.Y medical technology lab at MIT

“ ..is to make medical science (3) and therefore much more widely (4)..... but without (5)..... any of the (6)”

7) According to Jose Gomez-Marquez, the MIT researcher, medical fabrication relies on who at the moment?

- A) professional medical designers
- B) professional engineers
- C) professional expert

8) What other types of people should be included and involved in this field?

- A) physicians
- B) kids and parents
- C) non-experts

9) What is the Lego structure example of?

- A) syringe pumps
- B) gear sets
- C) medical therapies

10) Why are nebulizers of particular importance in developing countries?

- A) because they can deliver large quantities of oxygen
- B) because they can save people’s lives without the use of electricity
- C) because they can be used for any disease

11) What nebulizer innovation does the DIY lab offer?

- A) Nebulizers can be also used by kids
- B) Nebulizers can be repaired easily
- C) People can make their own nebulizers

12) What goal does Jose Gomez-Marquez hope to achieve over the next 10 years?

- A) Solve respiratory issues easily
- B) Make medicines similar to toys
- C) Provide medical care to everybody

13) The main aim of the team is to make medical devices easier and cheaper. T F

14) The main causes of respiratory issues in developing countries are dust and indoor cooking. T F

Second part of the video:

According to Erin O'Donohue of "Embrace":

how many babies die every year within the first month of their lives **(15)**

how many infants die in the first day in the world: **(16)**

how many infants die in the first few weeks : **(17)**

main causes of death: **(18)**..... **(19)**..... **(20)** related to low birth rate and **(21)**..... including **(22)**

When a child is born, they lack the **(23)** **(24)**

25) Why do 98% of newborn deaths occur in developing countries?

- A) because newborns are fat
- B) because there is a lack of resources
- C) because incubators don't work properly

26) What does the "Embrace Infant Warmer" use to keep the baby warm?

- A) a sleeping bag that maintains high temperatures
- B) an electric sleeping bag
- C) a sleeping bag that the baby uses up to fifty times

27) What is the key advantage of a sleeping bag?

- A) It's thick.
- B) It's priceless.
- C) It's accessible.

28) Erin O'Donohue says that:

- A) she has invented a new technology
- B) sleeping bags are addressed to children living in developing countries only
- C) many preventable deaths are linked to hypothermia

29) Erin O'Donohue created a low-cost solution to save her child. T F

30) Some people in developing countries sleep next to dangerous stoves and fires. T F

31) The non-profit organization has already delivered 150,000 sleeping bags in the world. T F

"Erin's idea is about taking an **(32)**..... technology and finding a **(33)**..... way to use it - it's one idea from one woman but millions of **(34)**..... could be changed by its **(35)**"

Appendix 8: Consent form



Università degli Studi di Torino
Dipartimento di Lingue e Letterature Straniere e Culture Moderne

Informazioni sul trattamento dei dati personali ai sensi dell'art. 13 del Regolamento 2016/679/UE

Versione n.1 del 11/12/2019

a) Identità e dati di contatto del Titolare

Il "Titolare" del trattamento è l'Università degli Studi di Torino - sede in via Verdi 8, 10124 Torino Centralino +39 011 6706111, mail: segreteria.rettore@unito.it

Legale rappresentante: il Rettore pro tempore

b) Dati di contatto del Responsabile della protezione dei dati personali

Il Responsabile della protezione dei dati personali – RPD, nella versione anglosassone Data Protection Officer – DPO, può essere contattato al seguente indirizzo mail rpd@unito.it.

c) Finalità del trattamento e base giuridica

L'Università di Torino è un'istituzione pubblica di alta cultura che effettua, ai sensi dell'art. 6, primo capoverso, lett. e) del Regolamento europeo 679 del 2016 in materia di protezione dei dati e., trattamenti di dati per finalità istituzionali di istruzione superiore e di ricerca (art. 1 dello Statuto dell'Università degli Studi di Torino), in attuazione dell'art. 33 della Costituzione.

La base giuridica è costituita dalla legge n. 168/1989 e s.m.i.

Il progetto di ricerca implica uno studio sull'uso della lingua inglese come mezzo di comunicazione e di istruzione (EMI: English Medium Instruction) nel corso di laurea a ciclo unico in Medicina e Chirurgia dell'Università di Torino, sede di Orbassano (TO), corso in lingua inglese, dal nome *Medicine and Surgery*. Il progetto si pone l'obiettivo di osservare una coorte di studenti iscritta al primo anno di tale corso di laurea e di verificare se migliori le proprie competenze linguistiche di partenza nell'arco di due anni accademici 2019/2020 e 2020/2021; inoltre, si osserverà come viene utilizzato l'Inglese in tale contesto universitario. Agli studenti verrà richiesto di compilare dei questionari conoscitivi e dei test linguistici, sviluppati sia in modalità cartacea che mediante l'utilizzo della piattaforma Moodle.

Il progetto di ricerca avrà le seguenti ricadute, benefici: panoramica del livello linguistico degli studenti di primo anno iscritti all'a.a.2019/2020 e osservazione del loro andamento linguistico nell'arco di due anni accademici 2019/2020 e 2020/2021.

I dati personali da Lei forniti sono necessari a consentire le attività di ricerca e gli adempimenti conseguenti. I dati saranno trattati nel rispetto delle disposizioni contenute nelle regole deontologiche - "Regole deontologiche per trattamenti a fini statistici o di ricerca scientifica" (G.U. del 14 gennaio 2019, n. 11).

d) Destinatari ed eventuali categorie di destinatari dei dati personali

I dati sono trattati all'interno dell'ente da soggetti autorizzati al trattamento per le finalità sopra riportate nel rispetto delle regole deontologiche e del codice etico

Informiamo inoltre che i dati raccolti (nome, cognome, matricola, e-mail) saranno utilizzati in forma anonima per scopi di ricerca e saranno comunicati a soggetti partner della ricerca, autorità regolatore competenti, comitato etico, autorità sanitarie italiane e straniere. Lo scopo delle verifiche è controllare il corretto svolgimento della ricerca in conformità alle disposizioni vigenti.

e) Trasferimento dati a paese terzo

L'Università si avvale dei servizi di Google per il settore Educational per i quali sono state adottate adeguate misure di garanzia (per approfondimenti vedasi la sezione: "Privacy and Security" consultabile sul portale di Ateneo alla voce Privacy); tali servizi implicano il trasferimento dei dati personali in un paese terzo extra-europeo (trattasi delle c.d. soluzioni "in cloud" di Google). Google aderisce al Privacy shield.

f) Periodo di conservazione dei dati

I dati relativi al progetto saranno conservati per il periodo previsto per il progetto di dottorato di tre anni e i dati, resi anonimi, potranno essere riutilizzati per finalità di ricerca.

g) Diritti sui dati

In riferimento ai propri dati personali, è possibile esercitare gratuitamente i diritti sui dati previsti dagli artt. 15-22 del Regolamento protezione dati personali europeo 2016/679 ove applicabili, attraverso l'invio di una specifica istanza ad oggetto: "Diritti privacy" a Dipartimento di Lingue e letterature straniere e culture moderne all'indirizzo: direzione.lingue@unito.it.

h) Reclamo

L'interessato ha diritto di proporre reclamo all'autorità di controllo e può rivolgersi all'Autorità Garante per la protezione dei dati personali: <https://www.garanteprivacy.it/>.

i) Conferimento dei dati

Il conferimento dei dati è facoltativo. In caso di mancato conferimento dei dati non sarà possibile partecipare al progetto che ha una ricaduta positiva sulla comunità studentesca. L'adesione alla ricerca è libera e volontaria, la mancata partecipazione non comporta alcuna conseguenza per l'interessato.

j) Profilazione

Il Titolare non utilizza processi automatizzati finalizzati alla profilazione.

Il/la sottoscritto/a _____, nato a _____, il
____/____/_____, residente in _____ (C.F.:
_____), acquisite le informazioni di cui sopra:

ha preso visione e compreso l'informativa al trattamento dei dati personali e aderisco in modo libero e volontario alla ricerca.

Data _____

Firma _____

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