

ENGLISH-MEDIUM INSTRUCTION IN DUTCH HIGHER EDUCATION

A policy reconstruction and impact study

IRIS BREETVELT

University of Amsterdam

Abstract

English has been introduced as the medium of instruction in three-quarters of Master's-degree programs in the Netherlands and one-quarter of Bachelor's degree programs. The principal driving force behind this trend is internationalization, with the harmonization and Anglicization of higher education applied as means to that end. There is increasing criticism of this development within educational institutions and the Dutch House of Representatives. The main criterion is that the use of English should not undermine the quality of the education provided. The required level of proficiency in English for teaching and receiving academic education is C1 of the CEFR (Common European Framework of Reference). For native speakers of Dutch (L1), both verbal information processing and text production in English (L2) burden the working memory more than their own language would.

Relatively little research has been conducted into the impact of English-medium instruction on the academic performance of Dutch students, and many of those studies that do exist are based on self-reporting rather than objective measurements. Semi-experimental research indicates that lecturers using L2 English are less clear, precise, redundant, and expressive, and also improvise less. Findings in respect of academic performance are inconsistent: some studies point to a decline, others find no effect on students' performance. Research into the impact of L2 as a medium of instruction is generally hindered by the non-random allocation of students to the language in which they are taught and a lack of objective measurements.

Keywords: internationalization, higher education, English-medium instruction, effect, academic performance.

The widespread introduction of English as the medium of instruction in Dutch higher education is closely associated with a culturally and economically motivated ambition to internationalize the sector and to attract overseas students. The question is: how does a shift to formal learning in English as L2 (or L3) affect the comprehension, learning ability, and academic performance of students with Dutch as L1? In seeking an answer, our principal sources are studies comparing learning processes and performance in English as L2 versus Dutch as L1. Encompassing as it does issues of didactics, cognitive psychology, and linguistics, this is a topic on which opinions in both the educational policy arena and pedagogical practice are becoming increasingly polarized.

The first part of this contribution (1) presents the current situation, pertinent policies and the ensuing public debate. The second part (2) deals with facility in a second language in general, and the third part (3) discusses the impact of the use of a second language on the acquisition of substantive knowledge and on educational performance.

1. INTRODUCTION

The past fifteen years have seen a fundamental change in Dutch university education, in the form of the widespread introduction of English as its language of instruction and discourse. This is particularly the case for Master's degree programs at research universities (Coleman, 2006). As of the end of December 2017, some 74 percent of these were taught entirely in English, as were 23 percent of Bachelor's degrees (*Factsheet taalbeleid universiteiten*, 2017). In 2017/2018 some 75.000 international students were enrolled in higher education in the Netherlands (Engelshoven, 2018). 16 Percent of the nation's total student population in academic (as opposed to vocational) higher education were foreigners. The paragraph on internationalization (1.1) presents the policy context of Anglicization. The next paragraph on the Higher education and research act (1.2) presents the rules for Anglicization. The third paragraph on political controversy and debate presents the development of the public debate, the stakeholders and their position and arguments (1.3).

1.1 *Internationalization and Anglicization*

The Sorbonne Declaration of 1988 and the Bologna Declaration of 1999 paved the way for the establishment of a European Higher Education Area (EHEA) with compatible courses and a uniform European Credit Transfer System (ECTS). This resulted in the introduction across Europe of the so-called Bachelor's-Master's structure in 2003, together with a quality-assurance framework based on the Dublin descriptors. In turn this led to the expressed ambition to provide a substantial proportion of instruction in the Master's phase in English in order to facilitate international student exchanges (Coleman, 2006; Warnaar, 2010). In the Netherlands, meanwhile, the universities decided collectively to adopt a more international perspective in the

light of government plans to build a knowledge economy with an outstanding academic infrastructure. In the 'war for talent', educational institutions are competing on a global stage. To do this effectively, the Dutch higher-education sector aspires to present itself as a strong international brand (Vereniging Hogescholen & VSNU, 2014) with English-medium degree programs as one of the cornerstones of this image.

Based on the assumption that internationalization makes for a smarter, more creative, and more entrepreneurial higher education sector, the Dutch Minister of Education, Culture and Science (Onderwijs, Cultuur en Wetenschap, OCW) described internationalization as crucial to the acquisition of knowledge, skills, and professional competencies in a 2014 strategy paper (Kamerstukken II 2013–2014, 22 452, nr. 412014). Further along this line, the recent letter of intent of the minister of Education, Culture and Science (Engelshoven, 2018) defines 'internationalization' as "strengthening the international dimensions of education in order to make students internationally more competent". The idea is that participating in an 'international classroom' will help students to qualify themselves for the global job market. In continental Europe, the Netherlands is now the leading provider of English-medium study programs. According to the minister, this Anglicization is the direct result of the effort to internationalize the higher education sector (Kamerstuk II Antwoord op schriftelijke vragen van het lid Jasper van Dijk (SP) aan de minister van onderwijs, cultuur en wetenschap over het groot manifest der nederlandse taal, 2015).

The adoption in 2017 of the Internationalization of Higher Education and Research Act (Wet Bevordering internationalisering hoger onderwijs en wetenschappelijk onderzoek) makes it easier for Dutch higher education institutions to provide courses of education jointly with their counterparts in other countries.

Another factor behind the internationalization of higher education is the sector's funding model. The government's budget for universities is allocated in part on the basis of academic performance, that is to say the number of Bachelor's and Master's degrees and institution awards. This makes attracting international students and ensuring that they graduate a particularly lucrative activity, since that secures a relatively large proportion of the available funds for the host institution. However, at the national level, the government budget for education is not raised when more international students participate. The result is: less public funding per student taught, as substantial investments are being made in English-medium courses in order to appeal to them (Onderwijsraad, 2018).

Increasing use of English as the language of instruction in higher education is a global phenomenon, but is policy-driven rather than originating from within the academic community (Macaro, Curle, Pun, An, & Dearden, 2018).

To summarize, global ambitions and the Dutch higher education funding system together encourage institutions to compete for international students. Implementation of the so-called 'Anglo-Saxon' model, complete with English as the primary medium of instruction, is the means whereby the internationalization of higher education is being accomplished.

1.2 *Legal and policy framework for medium of instruction*

Under Section 7.2 of the Dutch Higher Education and Research Act (Wet op het hoger onderwijs en wetenschappelijk onderzoek, WHW), covering language policy, as a general rule Dutch is the language “in which education is provided and examinations are set”. However, Section 7.2(c) establishes a broad exemption under which institutions appear to be able to justify switching to English as their medium of instruction “if the specific nature, structure or quality of the education or the origin of the students so necessitates, in accordance with a code of conduct determined by the governing institution’s body.” Responsibility for ensuring compliance with this part of the WHW rests with the Netherlands Inspectorate of Education (Onderwijsinspectie) and institutions’ own supervisory boards (Kwikkers, 2017). In a 2016 answer to parliamentary questions on this matter, the minister of Education, Culture and Science stated that a higher education institution’s language policy must be subservient to its pedagogical and quality objectives, and that the use of English should in no way detract from the quality of the education that is offered. In short, then, use of English rather than Dutch as the primary language of instruction in higher education must be justified by the nature and structure of the program and by the composition of its student population (i.e. not after deliberately attracting students from abroad in order to compensate for a lack of Dutch students), and it must not adversely affect the quality of the education provided. Moreover, recruiting overseas students (to compensate for declining numbers of new Dutch ones) must not be the sole motive for the Anglicization of courses (Aanhangsel handelingen II 2016/2017 nr.20.2016). In practice this means that, in keeping with the WHW, commercial motives cannot be the decisive factor to switch to English. In its Coalition Agreement for 2017-2021, the current Dutch government states that it will enforce the law in this respect more assertively: programs may be taught in English only when this provides genuine added value, they are of sufficient quality, and enough suitable Dutch-language alternatives are available. Recently, an association for better education in the Netherlands (vereniging Beter Onderwijs Nederland, BON) sued the Netherlands Inspectorate of Education as well as the universities of Twente and Maastricht that are mostly English speaking now for excessive Anglicization according to art 7.2 of the WHW. However, the minister now intends to modify the language paragraph of the WHW for its current stipulations would be too far removed from the practice in higher education (Engelshoven, 2018). The court decided that no convincing evidence was presented to be able to say that the anglicification of educational courses violates article 1.3 or article 7.2 of the Law on Higher Education and Scientific Research (ECLI:NL:RBMNE:2018:3117).

To help institutions make sound decisions about their favored medium of instruction, the minister of Education, Culture and Science asked the Royal Netherlands Academy of Arts and Sciences (*Koninklijke Nederlandse Akademie van Wetenschappen, KNAW*) to conduct a survey of language policy in higher education and the

arguments behind it (KNAW, 2017). The group conducting the survey divided these arguments into four categories:

- 1) Internationalization. English-medium instruction helps train students to be 'global citizens' by offering them greater international mobility and facilitating instruction by international academic personnel.
- 2) Careers. In some cases, the nature of graduate career prospects and job opportunities leads a program to opt for instruction in Dutch, while for others it is a decisive reason to opt for English.
- 3) Commercial interests. Anglicization is seen as a way to offset falling intakes of Dutch students by attracting more overseas students, thus recruiting more students overall and so securing a larger share of state higher education funding. In addition, use of English is considered an indicator of reputation and hence helps in finding potential partners around the world.
- 4) Curriculum and quality. Again, these factors persuade some programs to choose Dutch and others to opt for English. In the latter case, supporting arguments include greater availability of English-language teaching material and the perceived benefits of an 'international classroom' (with students from different countries), an international climate, and intercultural exchange. Also taken into consideration is mobility between bilingual and international programs, plus access to research work conducted in English.

While the above arguments clearly promote English-medium instruction, there are also clear drawbacks and risks involved in adopting that course. These include the high cost of converting a program from one language to another and, given the non-native L2 proficiency of both students and lecturers, the potential problems associated with its use not only as the medium of instruction but also as the primary medium for all internal communication.

The VSNU, an interest group of Dutch Universities, is developing a joint framework for language policy, drawing on the KNAW survey. And in her response to it, the then Minister of Education, Culture and Science Jet Bussemaker (Bussemaker, 2017) declared that bilingualism should be the norm in Dutch higher education—that is, use of the Dutch language should be upheld as well, with foreigners possessing at least a passive command of it. At the same time, though, she accepted the recommendation that lecturers be properly equipped to teach in English.

In a written response to the KNAW survey, the Dutch Language Union (*Taalunie*; 16/08/2017, ref. 905/MV/anh) stated that it had no wish to question the basic provisions of the WHW in respect of language policy but was of the opinion that it anyway provides a solid statutory basis for Dutch as the default medium of instruction in higher education, while allowing sufficient policy flexibility. The union warned of underlying 'yield thinking' at higher education institutions, with financial incentives encouraging them to attract large numbers of overseas students and in the process to subordinate their language policy to that end.

In his response to a 2009 parliamentary motion tabled by MP Martin Bosma requesting an audit of the standard of English used on the almost 1400 degree

programs taught entirely in that language at the time, the Minister of Education, Culture and Science at the time Ronald Plasterk (Plasterk, 2009) stated that quality of education—including the linguistic proficiency of teaching staff—is safeguarded through the accreditation regime and the Code of Conduct for the International Student in Dutch Higher Education (*Gedragscode Internationale Student in het Nederlands Hoger Onderwijs*). Drawing on data issued by the Accreditation Organization of the Netherlands and Flanders (*Nederlands-Vlaamse Accreditatieorganisatie, NVAO*) and opinions gathered through the National Student Survey (*Nationale Studentenenquête, NSE*), the minister concluded that the English-language skills of lecturers in higher education were satisfactory overall (*Kamerstuk II vergaderjaar 2009–2010, 31 288, nr. 792010*): the 2009 NSE rated them at 6.8 on average at Bachelor level and 7.2 for Master's degree programs (at a scale from 0 to 10). Lecturers and other academic personnel undergo regular assessments of their English in accordance with the Common European Framework of Reference for Languages (CEFR), and training in its academic use is included in the syllabus of the Basic Teaching Qualification (*Basiskwalificatie Onderwijs, BKO*), which all lecturers at research universities are required to obtain, and in the equivalent professional skills packages for teaching staff at universities of applied science. Courses for lecturers in spoken and written English are offered at various levels, including Cambridge Certificate courses. And proficiency in the language is frequently a compulsory component of staff appraisals.

The VSNU also denies that Anglicization reduces the quality of education. Data from the 2017 NSE indicates that, whether taught in Dutch or in English, students are equally positive on average about the quality of their programs (scoring 4.1 out of 5) and of the didactic abilities of their lecturers (scoring 3.8 out of 5). It is striking, too, that students taught entirely in English are satisfied with their lecturers' command of the language (scoring 4.1 out of 5) (*Factsheet taalbeleid universiteiten 2017*).

With regard to the benefits of English-medium instruction, and possibly even its added value, the claims emanating from the educational policy field may be forceful but their factual basis is weak.

Student assessments of their courses and lecturers are purely subjective and certainly not objective indicators of educational quality. In fact, their perception of their learning environment is more a measure of their own satisfaction than one of the effectiveness of the instruction they are receiving (Linse, 2017; Spooren, Brockx, & Mortelmans, 2013). The convergent validity of student evaluations of teaching, defined as the correlation between their opinions concerning their education and lecturers on the one hand and their actual academic performance on the other, has been shown to be negligible (Uttl, White, & Wong Gonzalez, 2017). For example, it appears that student evaluations of their lecturers are negatively influenced if non-native lecturers speak English with an accent (Hendriks, van Meurs, & Reimer, 2018).

Academic performance and indicators for the learning process form a more objective measure for judging education quality. Moreover, in a recent letter the present Minister of Education, Culture and Science acknowledges the current discussion

on internationalization and the dominance of English as a language of instruction, and places this in the perspective of access to higher education. Thus, she requests the *Sociaal Cultureel Planbureau* (SCP, an interdepartmental social science research agency) to study the impact of the use of English on the accessibility of higher education for specific vulnerable groups (Engelshoven, 2018).

To summarize, while the general rule enshrined in the WHW is that higher education and examinations in the Netherlands should be conducted in Dutch, the exemption clause allows substantial policy scope to deviate from that norm and hence adopt English-medium instruction. Ministerial policy is that the use of English should not detract from the quality of the education provided, and in particular that the exemption may not be invoked purely in order to increase student numbers. Quality of the education programs is measured by the student evaluation of teaching.

1.3 Language policy: the debate

The Anglicization of higher education, in particular at research universities, has become the subject of an increasingly fierce debate in the Netherlands. Factors stirring this up include the causal chain assumed to be inherent in the policy, the perceived conflict with the language provisions of the WHW, practical experiences with Anglicization, concerns about the quality of the courses and about the position of Dutch as an academic language, the ideological connotations of the so-called 'Anglo-Saxon' language and culture, and fears that certain groups will lose access to higher education. Both proponents and opponents of Anglicization see quality as their trump card, the critics because they fear that the rise of English-medium instruction is undermining fundamental comprehension of academic subjects by Dutch students and the enthusiasts because they believe that education is improved by introducing a global perspective in the form of international classrooms and the like.

Parliamentary consideration of the topic began with the Bosma motion of 2009, calling for an audit of the extent of English-language instruction in higher education and the standard of the English being used (Bosma, 2009). In 2011 the Education Council of the Netherlands (*Onderwijsraad*) published a report recommending a national debate on the whole issue. The council wants higher education institutions to promote the development of high-quality degree programs taught in English while at the same time safeguarding the position of Dutch as a language of culture and academia (Onderwijsraad, 2011). At a meeting in 2012 to discuss the use of both Dutch and English in higher education, the Interparliamentary Committee of the Dutch Language Union expressed its concern about the ability to transfer knowledge effectively in a non-native tongue and pointed out the double linguistic 'leap' demanded by English-medium higher education: into the academic language of the discipline being studied and into English as a second language. Maintaining educational quality under such circumstances, the committee asserted, requires a high level of linguistic proficiency on the part of both lecturers and students.

In 2014 a group of academic personnel at the Amsterdam Centre for Ancient Studies and Archaeology (ACASA, a joint institute of the University of Amsterdam and VU University Amsterdam) published a manifesto demanding that instruction there remain in Dutch; English-medium instruction, they argued, could be disastrous for the intellectual development of their students. Taking that document as its starting point, in June 2015 a group called the Language Collective (*Het Taalcollectief*) issued a Grand Manifesto for the Dutch Language (*Groot Manifest der Nederlandse Taal*) on the use of Dutch and English in higher education. Expressing alarm at the ‘mass Anglicization’ of higher education, this claimed not only that precision, nuance, and eloquence are all lost in a second language, but also that subject-related material is not absorbed effectively. And it refuted the notion that students learn to read and write good English simply from listening to lectures given in English.

Inspired by the Grand Manifesto, in 2015 and 2016 the member of Parliament Jasper van Dijk submitted a number of critical written parliamentary questions to the Minister of Education, Culture and Science on such topics as compliance with and enforcement of Section 7.2 of the WHW. He also backed the collective’s call for a fundamental debate on the way higher education institutions interpret that section, and highlighted attracting more students as one motive for their approach. (*Kamerstukken II 2015–2016, 22 452, nr. 482016; Aanhangsel handelingen II 2016/2017 nr.20.2016*).

More recently, in response to the KNAW survey discussed earlier (KNAW, 2017), the members of the parliamentary Select Committee for Education, Culture and Science have also questioned the language policies adopted by higher education institutions. Some of the political parties represented have their doubts as to whether the nature and content of particular programs really justify teaching them in English, while others believe that it should be left up to the providers themselves to determine the practical arrangements for their courses—including the language of instruction. At the heart of this debate are the ‘necessity’ to deviate from the principle that instruction be in Dutch, as provided for in Section 7.2(c) of the WHW, and the nature of the arguments used to justify such an exemption. It has been pointed out that the current funding system may incite programs to consider adopting English-medium instruction. Another point of contention is the discrepancy between quality of the courses as assessed by the NVAO (the Dutch-Flemish Accreditation Organization (*Nederlands-Vlaamse Accreditatieorganisatie*) and the actual functioning of ‘international classrooms’, about which concerns have been raised due to linguistic deficiencies on the part of both lecturers and students.

The principal arguments emanating from the academic community itself against the instruction of Dutch-speaking (L1) students in English (L2 or even L3) are as follows (<https://www.folia.nl/dossiers/23/verengelsing-en-buitenlandse-studenten>).

1. Lecturers and students are unable to express themselves to their full ability because they lack sufficient command of English as L2 (Groot, 2018).

2. Intellectual development is delayed and undermined because the use of L2 hinders textual comprehension and the ability to analyze, reason, and formulate effectively (Groot, 2018).
3. The use of English introduces undesirable substantive, linguistic, cultural, and/or political filters, especially in the social sciences and in linguistic and cultural subjects.
4. As a result, the quality of educational provision is diminished.
5. Instruction in English leads to neglect of Dutch as an academic, scientific, and professional language (Groot, 2018).
6. Staff and students come to be selected (or to self-select) according to their proficiency in English as well as or even instead of valid substantive criteria, thus endangering access to education on those grounds.

The arguments in favor of English-medium instruction as a quality-enhancing factor only directly touch on the learning process insofar as they concern the supposed outlook-expanding effects of more diverse educational communities, but the evidence in support of these claims is weak (Groot, 2018).

In 2011 the Education Council of the Netherlands called for better measures to promote, maintain, and monitor the quality of programs taught in English (Onderwijsraad, 2011). Specifically, it recommended that quality factors associated with English-medium instruction be given prominence in the accreditation criteria used by the NVAO. However, that organization's 2016 Assessment Framework for the Higher Education Accreditation System of the Netherlands (*Beoordelingskader accreditatiestelsel hoger onderwijs Nederland 2016*) makes no mention of the language programs are taught in. As for the Certificate for Quality in Internationalization for which programs can apply, this is not yet available in all domains. The Netherlands Inspectorate of Education also pays little attention to practical aspects of language use as long as the supporting policy documents are in order (KNAW, 2017).

What studies reveal the impact of English-medium instruction in higher education on curriculum content, the learning process (didactics, interaction, and cognitive processing), student and lecturer workloads, and learning outcomes, and hence the overall quality of the education provided? In its survey (KNAW, 2017), the KNAW found that very little research has been conducted into the learning and cognitive effects of instruction in English by and for those for whom it is a second language.

To summarize, since 2005 the rise of English-medium instruction has been a matter of increasingly intensive discussion between the Ministry of OCW and House of Representatives, fueled on the one hand by advisory reports from the Royal Academy (KNAW 2005, 2017) and Education Council of the Netherlands (Onderwijsraad, 2011) and on the other by contributions from vociferously opinionated lecturers. Countering the claim by some that internationalization improves the quality of educational provision are concerns about its impact on the learning process. The arguments on both sides are compromised by a dearth of recent objective research data.

2. LANGUAGE SKILLS, INFORMATION PROCESSING, AND ANGLICIZATION

In this section indirect evidence on the hypothesized effect of English as medium of instruction on content learning is the focus.

In Cummins' model of second-language acquisition, the less contextualized and more cognitively demanding a task is linguistically, the more performance in its substantive aspects is determined by linguistic ability. So academic performance in the international classroom, which is cognitively demanding but largely devoid of context, is to a large extent the product of proficiency in L2 (Abriam-Yago, Yoder, & Kataoka-Yahiro, 1999). According to Cummins (Cummins, 1983), acquisition of cognitive academic language proficiency takes some five to seven years. A linguistic deficiency hinders deep learning (of meaning and depth) more than it does surface learning (of superficialities), and hence affects the quality of cognitive processing (Klaassen, 2001; Uludağ & Uludağ, 2017).

The Royal Academy KNAW (*Commissie_Nederlands_als_wetenschapstaal*, 2003), the Education Council of the Netherlands (Onderwijsraad, 2011), and the association for better education in the Netherlands BON—which launched a petition against the Anglicization of Dutch universities in June 2017—are all concerned about the unbridled spread of English in Dutch higher education. A number of educational institutions have worries concerning the quality of knowledge transfer due to lack of nuance and depth in L2, as well as reduced interaction (KNAW, 2017). Many, however, seem to assume that sufficient proficiency in English (level C1 or C2) on the part of lecturers and students means that the education they are providing is of sufficient quality. With regard to this relationship, between linguistic ability and quality, conversations with stakeholders reveal that English-medium instruction does influence the content of learning materials, the education provided, and the assignments set, although both an 'enriching' effect and an 'impoverishing' one are mentioned. Dutch cases and situations are overlooked, which is definitely a negative. Intercultural exchange and the necessary didactics sometimes fall short of expectations, so that the international classroom does not function as intended. Both the expressive ability and the comprehension of students and lecturers for whom English is L2 and Dutch is L1 are compromised, more so on productive side than the receptive (Groot, 2018). As a result, classes given in English are often less dynamic and lack depth, liveliness, and subtlety compared with their Dutch-medium equivalents. Students with only a moderate command of English frequently respond negatively to assessments of their test and examination papers, while lecturers have greater difficulty providing good feedback and marking English-language assignments and papers. The focus in their training is on academic language proficiency, to the point that not enough attention is paid to basic interpersonal communication skills.

2.1 Required academic English-language proficiency

The NVAO (Dutch-Flemish Accreditation Organization) awards a Certificate for Quality in Internationalization, for which higher education programs and institutions can apply. To qualify, they must comply with the *Frameworks for the Assessment of Quality in Internationalization* (2015). This includes some standards related to language. The accompanying *Guide to Assessing the Quality of Internationalization* mentions that in Criterion 4b: “Staff members have sufficient internationalization experience, intercultural competences and language skills.” And Criterion 4c states, “The services provided to the staff (e.g. training, facilities, staff exchanges) are consistent with the staff composition and facilitate international experiences, intercultural competences and language skills.” But no specific level is mentioned, and nothing at all is said about students’ language skills.

The *Code of Conduct for the International Student in Dutch Higher Education* (2017) does include a minimum English-language proficiency requirement for the overseas student, equivalent to that expected of a Dutch student upon completion of pre-university secondary education (VWO). If joining a Bachelor’s or Master’s degree course taught in English, the required standard is an overall band score of 6.0 in the academic International English Language Testing System (IELTS) test. An IELTS score of 6.5 corresponds with level C1 in the Common European Frame of Reference (CEFR), which students are expected to have reached by the end of a Master’s degree program and is also required of lecturers teaching at that Master’s level (Klaassen & Bos, 2010). Acceptable alternatives to the IELTS are TOEFL and Cambridge ESOL. An international student previously educated in English is exempt from the obligation to take a language test. Finally, the *Code of Conduct* also states, “The educational institution shall ensure that the lecturers possess a sufficient command of the language in which they teach.” More specifically, the universities recently agreed that staff members who teach in English should have a command of that language at least at the C1 level of CEFR (Engelshoven, 2018).

According to the CEFR, the following aspects of productive oral language skills are relevant (Klaassen & Bos, 2010).

- Phonological control
- Vocabulary range.
- Vocabulary control.
- Spoken fluency (spontaneous and articulate expression).
- Coherence and cohesion (structure and conjunctions).
- Discussion and debate.
- Addressing audiences.

A study of academic personnel in four types of position (full, associate, and assistant professor, and lecturer) on eight-degree courses at Delft University of Technology (Klaassen & Bos, 2010) found that 81 percent possessed a productive oral language ability in English at CEFR level C1 or above. There appeared to be a direct correlation with seniority: the more senior their position, the better they spoke English. Overall,

the subjects scored better in the Oxford Quick Placement Test than in the productive oral language skills test. The Delft academics also outperformed peers from Leiden University, with 85 percent achieving level C1 or higher, compared with 45 percent at Leiden. The average level of language proficiency at Delft was C1. Student ratings of their lecturers seem to be determined not only by their linguistic abilities, but also by the students' own.

In a study of lecturer and student English-language skills at KU Leuven (Sercu & Put, 2003), on average the lecturers displayed good or very good writing proficiency and a satisfactory command of the spoken language. Students' abilities were adequate enough to comprehend lectures delivered in English, but not sufficient to write papers or give oral presentations.

Other research has found that comprehending first-year university texts in L2 requires a vocabulary of 10,000 words. By comparison, a person's average available vocabulary in L1 is approximately 19,000 words. To follow even a basic academic course in English as L2, then, the student must possess a vocabulary only 40 percent less than in their native language. There is a significant relationship between vocabulary and textual comprehension in L2 speakers ($r = .63$) (Hazenberg & Hulstijn, 1996); the vocabulary needed for effective comprehension—assuming a need to understand 98 percent of words used without using aids—is 8000-9000 words in the case of a written text and 6000-7000 words for a spoken one (Nation, 2006).

Too limited a vocabulary hinders expressive ability and comprehension, but also intellectual capacity because words as lexical concepts constitute the building blocks of thought (Groot, 2018).

To summarize, the minimum standard of English-language proficiency required of both students and lecturers on a course of higher education taught in that language is CEFR level C1. Not all Dutch higher education institutions explicitly test for this in students and lecturers educated in the Netherlands. A limited vocabulary, in particular, adversely affects comprehension and expressive ability—the minimum vocabulary needs to be around 10,000 words.

2.2 L2 and pressure on the working memory, information coding, and long-term retention

Word recognition and word production take longer in L2 than L1, because they are less automatic. When performing a task in L2, many areas of the brain are more activated than if it is performed in L1—an effect attributed to the less efficient processing of L2 (Indefrey, 2006). The mental burden of using L2 is relatively heavy (Groot, 2017).

The working memory is essential for cognitive and linguistic processing. In the field of human information processing the resource hypothesis assumes that the cognitive burden of processing in L2 is greater, leaving less working-memory capacity free for other processes (Vander Beken, Woumans, & Brysbaert, 2017). The human working memory incorporates a temporary information-storage system, on which

we draw for the further cognitive manipulation of information. This makes the working memory a good predictor of performance in learning and cognitive processing tasks requiring fluid intelligence, reasoning ability, or mathematical skill. The same system also serves linguistic processing. The phonological loop, a facet of the working memory, consists of a storage component (Brodmann area 44) and a subvocal repetition component for verbal information, to counter deterioration during storage (Brodmann areas 6 and 40). The proper functioning of this loop is closely associated with the ability to acquire vocabulary and syntax in a second language. A central executive control component activates and updates information, focuses attention, switches between the working memory's subsystems, and inhibits distracting information (Baddeley, 2003; Linck, Osthus, Koeth, & Bunting, 2014).

A meta-analysis of studies investigating links between L2 and working memory (Linck et al., 2014) reveals a robust positive connection around a correlation of .255 (CI=[.216, .291]). The working memory is important for both receptive and productive L2 processing. The correlation between L2 proficiency and working memory as storage capacity is lower than that between L2 proficiency on the one hand and working memory as both storage capacity and central executive control on the other hand. This suggests that the central executive control component of the working memory is of greater importance for L2 proficiency, perhaps in order to maintain the availability of information and goals despite distractions and interference—for example, by suppressing interference from representations in L1. Working-memory tasks requiring more executive control are better predictors of L2 performance. Subsequent research by the same author revealed the existence of a positive link between the central executive control component of working memory, in the sense that it checks distracting information, and learning L2—but not one between inhibition and dominant (L1) response and learning L2. The conclusion drawn from this is that the executive control component of working memory plays an important part in L2 proficiency (Linck & Weiss, 2015).

More research is needed to better understand the relationship between working memory and partial L2 proficiency, as well as variation in the role played in L2 by working memory according to the level of that proficiency (Linck et al., 2014).

The temporary storage capacity of the working memory is measured using tasks that require the storage and repetition of information—for example, sequences of unrelated numbers or words. Its processing capacity is investigated through tasks that make simultaneous demands on its storage and processing capabilities. Examples of these include the Reading Span Test (RST), in which sentences are read and the last word of each then has to be reproduced or, alternatively, the subject is asked to reproduce a spoken series of numbers in reverse order (Juffs & Harrington, 2011; Linck et al., 2014). Performance in the RST correlates with school performance as measured in scholastic aptitude tests. When processing sentences in L2, proficiency in L1—over and above the capacity of the working memory—is the predominant predictor of ability. The role of the phonological short-term memory in learning words in L2 is not entirely clear. Research into working memory as an explainer of

variation in general L2 proficiency indicates that its influence in the learning of vocabulary declines as the size of that vocabulary increases. Fluency and adjustment of speech are associated with working-memory capacity to an extent, but not entirely. Research on students studying abroad shows that suppressing L1 during the use of L2 requires a better working memory.

In reading for study, subject knowledge has a greater effect on textual comprehension than working memory does; its contribution to the comprehension of texts in L2 is moderated by linguistic knowledge and by prior familiarity with the subject matter. The best predictor of textual comprehension in readers with low linguistic proficiency is knowledge of L2; in those with high linguistic proficiency it is working memory. Moreover, working memory facilitates textual comprehension if the reader possesses sufficient knowledge of the subject matter, in the sense that they have a good command of the relevant vocabulary (Joh & Plakans, 2017). When reading in L2, linguistic strategies (paraphrasing and translating sections of text) may play a compensatory role to offset the slower processing of words' meanings and of syntactical structures, but that does not cause any inhibition of the conceptual process of textual comprehension (Stevenson, 2005).

Little research has been conducted into the effect of working memory on writing in L2. Limited linguistic knowledge hinders the writing process in a foreign language (FL). Comparative research on writing in L1 versus FL shows that the correlation between linguistic knowledge and writing performance is higher in the latter than the former. Revisions are used to compensate for shortcomings in linguistic knowledge and fluency, but with these attention is focused locally. There is less conceptualization in FL, and the texts produced are of lower rhetorical quality (Schoonen, Snelings, Stevenson, & Gelderen, 2009). Stevenson has found that, due to their lack of fluency in L2, pupils undertaking written L2 assignments in Dutch pre-university secondary education (VWO) use more strategies to solve linguistic problems (phrase revisions, re-reading text) than they do in L1. Their conceptual processes are more inhibited, as indicated by less use of conceptualization, more local than overall re-reading of their own texts during the writing process, and their production of rhetorically less-developed texts than in L1. Their degree of inhibition is related to their lack of linguistic fluency, although the actual quality of their texts is not (Stevenson, 2005). A comparative study of argumentative writing in Dutch (L1) and English (L2) by first-year students shows that the cognitive processes are different in the two languages. Their variation across tasks is more limited in L2, probably as a result of the cognitive burden caused by writing in L2. When writing in L2, there are more compositional episodes than when producing a text in L1. This indicates a shorter attention span in L2. The process components of reading and formulation differ in their phasing, too: when writing in L2, there is more reading early in the process and formulation is spread more evenly through it. Indeed, writers who formulate more at the beginning of the process generate worse L2 texts than those who do this later on in the writing process. Planning as a process component is also associated with

poorer L2 text quality when undertaken early in the writing process than when done throughout its course (Van Weijen, 2009).

With their auditory and verbal modality, communicative learning environments such as the 'international classrooms' disadvantage L2 students with a weak working memory. Compensating for this requires multimedia support (Juffs & Harrington, 2011).

Research focusing on the role of working memory in learning L2 tends to look for a relationship between working-memory capacity and general or specific skills in L2, whereas subject-specific cognitive processing and performance are more or less ignored as such variables.

Working memory is not a straightforward construct but a system of processes that help in learning L2 (vocabulary, grammar, and conversational comprehension, as well as focusing attention). The working memory can be viewed as either a dynamic state or as a fixed feature, with not only its phonological-loop component apparently important in relation to L2 learning, but also the attention-control function that suppresses competing information (Juffs & Harrington, 2011). The relationship between working memory and L2 is influenced by the nature of the way the former is measured, by characteristics of the various aspects of L2 skills and by the L2 proficiency level of the research population (Linck et al., 2014). Information processing in L2 particularly draws on the working memory in less linguistically skilled speakers, with executive control as a function of that memory function appearing to be especially involved (Linck et al., 2014).

To summarize, information processing taxes the working memory more in L2 than it does in L1. It is not so much the storage component that is affected by this as the central executive control component. The influence of the working memory on information processing in L2 varies according to the subject's proficiency in that language. Both the comprehension and the production of texts are limited in their quality by insufficient linguistic knowledge, vocabulary, and fluency. When measuring academic performance, the nature of the task set (recall or recognition) has a differential effect on L2 versus L1. Recall (answering questions in essay form) is worse in L2.

3. IMPACT STUDY: ENGLISH-MEDIUM INSTRUCTION IN DUTCH HIGHER EDUCATION

Are there studies indicating that the Anglicization of higher education in the Netherlands does not detract from the quality of provision, as the Minister of Education, Culture and Science suggests? In order to answer this question, I looked for research into how instruction in English (as L2) affects academic performance, the learning process, and study loads.

A literature search was done in the database ERIC using the following combination of search terms:

#1 English as language of instruction:

"English (Second Language)"/ OR ((Second Language Instruction/ OR Second Language Learning/ OR Language of Instruction/) AND (english* OR anglosa*).ti,ab,id.) OR ((teaching language OR instructional language).ti,ab,id. AND (english* OR anglosa*).ti,ab,id.)

AND

#2 English as medium, AND not as subject

(Subject matter OR content learning OR (english ADJ3 medium) OR EMI OR "Content and Language Integrated Learning" OR CLIL).ti,ab,id.

AND

#3 higher education

(higher education).el. OR higher education/ OR undergraduate students/ OR undergraduate study/ OR graduate students/ OR graduate study/ OR universities/ OR (undergrad* OR tertiary education OR tertiary school* OR postsecondary education OR postsecondary school* OR universit*).ti,ab,id.

One recent review (Macaro et al., 2018) examines whether being taught in English helps students learn the language better without detracting from their subject-specific learning, but provides no definitive answer. Of the four studies it reports as addressing this topic, only two measure performance directly rather than relying on questionnaires. Other research shows that the effects on academic performance of surface and deep learning (as learning styles) are mediated, in whole and in part respectively, by deficiency versus proficiency in English (Uludağ & Uludağ, 2017).

English-medium courses in Dutch higher education seek to provide Content and Language Integrated Learning (CLIL, defined as: a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language). Several studies reflect on CLIL, and these are considered relevant here, at least insofar as they address content learning rather than language learning. For CLIL to be effective, it is important that students dare to engage in interaction without fear of being criticized for linguistic errors. Learning the subject-specific materials requires Cognitive Academic Language Proficiency (CALP), while Basic Interpersonal Communication Skills (BICS) are needed for interaction within the learning group. And if the cognitive requirements are high, the linguistic ones need to be kept lower.

The four relevant assessment factors for bilingual education are communication, content, cognition, and culture (Coyle, 2007). From the CLIL perspective, ideally, knowledge lands as solidly in L2 as in L1, and progress in learning the subject-specific material in L2 should be no slower than it would be in L1. Impact studies of bilingual secondary education are informative, although they obviously concern a different age group than the young adults in higher education.

Positive effects for communication skills in L2 are evident, even when corrected for possible self-selection bias. As regards learning outcomes in respect of subject-specific know-how, findings are less unambiguously positive: specialist terminology is not remembered well. From the little research so far undertaken into bilingual

Dutch-English secondary education in the Netherlands, there appears to be a positive impact on proficiency in English and no negative effect on performance in other subjects taught in English (Graaff, 2012; Ploeg, 2016).

However, there is a substantial body of research into forms of bilingual education and L2 immersion programs at secondary level in Canada and the United States (Rymenans & Decoo, 1998). Studies of French-language immersion programs for English-speaking pupils show that subject-specific performance is certainly no less than that of learners in conventional education with comparable IQs and socio-economic backgrounds. Whether any initial retardation of progress occurs depends on the participant's linguistic proficiency upon joining the program. In receptive skills (reading, listening), pupils achieve near-native level. On the productive side, however, they do not because they still lack some degree of grammatical accuracy and lexical variation (Graaff, 2012). The performances in non-language subjects of pupils in bilingual education are no different from those of their peers in regular schools (Huibregtse, Admiraal, Bot, Coleman, & Westhoff, 2000).

Comparative research into differences in the writing process and quality of texts in argumentative L1 and L2 written work by pupils in the third year of Dutch pre-university education (VWO) reveals huge variations in quality. There is only a very small overlap between the best L2 texts and the worst L1 ones. Moreover, the relationship between writing process and text quality varies in the two languages, indicating that effective writing in L2 involves a different task-execution process than in L1—at any rate when proficiency in L2 is low (Tillema, 2012).

A 1995 PhD study at Delft University of Technology investigated how English-medium instruction affected lecturer duties, lecturer behavior, and student learning outcomes (Vinke, 1995).

From questionnaires and observation, this study reported a negative impact on lecturers' tasks as a result of linguistic limitations. In addition, lecturer behavior in L2 was less effective.

Questionnaires completed by lecturers in three different disciplines revealed that the majority rated their own command of spoken English quite good and claimed to experience no difference between teaching in English and in Dutch. However, the majority spent more time preparing new English-medium lessons, regularly had to consult dictionaries, were less able to improvise, and were more limited in their expressive ability. Factors associated with fewer perceived limitations in this respect were length of teaching experience, time spent living in an English-speaking country, and participation in English language courses. Nevertheless, overall educational workloads were heavier, lessons took more time to prepare, and actual teaching sapped more of lecturers' mental energy. Those with less experience teaching in English were affected more strongly by these drawbacks than their more experienced colleagues.

Observations of lecturer behavior indicated that structure and interaction were not more specific in English-medium education than when teaching was in Dutch, but there was less redundancy. The linguistic limitations pertain to vocabulary,

redundancy of knowledge transfer, clarity, and accuracy. In addition, there was reduced talking speed, expressiveness, and ability to deal with scenarios not prepared for in advance—in other words, less improvisational ability. In this respect, it must be remembered that clear and accurate formulation, redundancy, expressiveness, and improvisation are key components of effective lecturer behavior. Lecturers expressed themselves less clearly and precisely in English, and they spoke more slowly (96 words a minute on average, compared with 131 in Dutch).

In an experimental study in which Dutch students were allocated at random to a lecture in either English or Dutch, it was found that the former generated significantly poorer learning outcomes (a medium effect $d = .55$: a score loss of half a standard deviation, with the proportion of fail marks rising from 16 to 29 percent) in a test taken immediately after the lecture. Changing from L1 to L2-medium instruction thus brings with it a moderate loss of learning ability, even though this does not change students' perception of the didactics. In this case it also needs to be borne in mind that the topic of the experimental English-language lecture, philosophy of science, was significantly less difficult for the students concerned than the advanced technical instruction they are used to receiving at Delft. So, it is entirely possible that the learning outcome in the English education condition is still undervalued. Fast speaking makes it harder to process information in L2.

When it comes to the quality and effectiveness of education, therefore, the language of instruction is indeed a contributory factor. Switching instruction from L1 to L2 has adverse effects for both lecturers and students.

Also at Delft University of Technology, for her PhD Klaassen investigated the relationship between effective teaching skills (presentation, structure, interaction) and linguistic proficiency in lecturers teaching in English as L2 (Klaassen, 2001). A secondary question in this study concerned the effect of English-medium instruction and examinations on learning outcomes. Experimental research, by means of a multiple-choice test, on the ability of first-year students to reproduce the knowledge acquired in a lecture on philosophy of science (cf. Vinke, 1995) revealed that that is half a standard deviation lower when delivered in English than when given in Dutch: the average score in test fell from 7.0/10 to 6.1/10, with twice as many students failing the test. The suspicion is that students linger too much at the word and sentence level in their attempts at comprehension, and apply translation as a strategy to understand what they are hearing. In a quasi-experimental study, the effects of prior knowledge on cognitive learning strategies and learning outcomes were investigated in students taking a module in English (L2) and others taking it, taught by the same lecturer, in Dutch (L1). When instruction was in English, fewer superficial learning strategies such as memorization and selection techniques were used, and more deep ones like critical processing. This finding counters the hypothesis, but is attributed to a self-selection bias by students already good at English and hence confident in their ability to learn in that language. Moreover, and also against expectations, the students being taught in English spent fewer hours on their study. In respect of test results on knowledge and understanding, the language of instruction had no effect.

But there was some impact, negatively for English as L2, with regard to application and integration—that is, deep learning. With English-medium instruction, clarity of presentation is more important than structure and interaction. The average TOEFL score for proficiency in English of lecturers is 623. It is recommended that lecturers receive didactic training to teach in English.

During the 1996-1998 academic years, medical students at Maastricht University were asked at the end of three English-medium teaching blocks how the use of that language had affected the quality of discussion within their problem-driven teaching groups. About half reported a negative impact on this (Dijcks, Dolmans, & Glatz, 2001).

A Korean study (Joe & Lee, 2013) has revealed no effect on medical students' understanding of their lectures when these are given in English. Their post-lecture test scores were significantly higher than their pre-lecture ones, so the sessions clearly delivered learning, but there was no significant difference between the post-test scores whether the medium was English (L2) or Korean (L1). Nor did the students' prior proficiency in English influence their comprehension. Self-reporting on this topic, 26 percent of students were positive about their understanding of the lecture, 23 percent negative. More than half preferred L1 to L2 as their medium of instruction. Overall, this comparative research indicates that English-medium instruction (L2) did not affect academic performance.

Two research reports (*Engels in het bacheloronderwijs van de universiteit utrecht.2013*; *Engels in het masteronderwijs van de universiteit utrecht.2013*) on the use of English, in Bachelor's and Master's education respectively, at Utrecht University were published in 2013. The studies behind them were prompted by two recommendations from the Education Council of the Netherlands (Onderwijsraad, 2011) concerning the quality of English-medium academic higher education and the proficiency in English of students so that they can follow courses at this level. Data was gathered using questionnaires completed by more than 900 bachelor-students in six departments and approximately 1400 master-students, in essence asking them whether and to what extent instruction in English represented a stumbling block to learning. The majority of respondents assessed their lecturers' proficiency in English as satisfactory (55 percent of Bachelor's degree students / 73 percent Master's degree students). A minority (40/26 percent) found that a lecturer's lack of linguistic ability distracted them from the subject matter. However, lecturers were not tested on their actual command of English. Most of the students rated their own English as satisfactory (92/97 percent for reading ability, 69/77 for writing, 91/94 for listening, and 68/77 for speaking). Of the Bachelor's students, 13 percent admitted not meeting the required standard of proficiency in English. Of the Master's students, 72 percent claimed a command of the language at academic level. Across the board, respondents rated their productive linguistic skills lower than their receptive ones.

A Spanish study (Dafouz, Camacho, & Urquia, 2014) comparing the performances of students being taught in English (L2) and in Spanish (L1) on three Economics modules, ranging in character from 'hard' to 'soft', pure to applied, found no significance

difference related to the medium of instruction (L1 versus L2) on any of the three courses. In other words, English-medium instruction did not adversely affect academic performance in any way.

To summarize, findings as to the impact on the learning process and quality of educational provision of instruction in English (L2) vary widely. At secondary-school level, bilingual education (L2) has no detrimental effect on performance in non-language subjects when compared with conventional schooling (L1).

But experimental and other research in higher education shows that it does make difference whether instruction is in L1 or L2. For lecturers, use of the latter introduces linguistic limitations resulting in less clarity, redundancy, precision, expressiveness, and improvisation, plus an increased workload. Despite putting greater effort into their preparations, in L2 they deliver a lesser didactic performance than they do in L1. Older experimental research indicates a decline in performance when instruction is in L2, although this effect is less apparent in quasi-experimental studies.

4. CONCLUSIONS AND IMPLICATIONS FOR RESEARCH AND LANGUAGE POLICY

There are reasons to anticipate deterioration of the quality of education when using English (L2) as a medium of instruction for Dutch students. These reasons stem from the following findings:

- Students and teachers do not always have the presumed level of language proficiency of C1 (CEFR).
- Communication and information processing are more demanding on working memory in L2
- The ability to express themselves and the didactic agility of teachers are more limited in L2 than in L1.
- Little research has been conducted into the effects of English-medium instruction on substantive learning in higher education. What studies are available present varied findings: some indicate that instruction in English (L2) does indeed adversely affect academic performance (Vinke, 1995; Klaassen, 2001), whereas others state that learning outcomes in such situations are no worse than when students are taught in L1 (Joe, 2013; Dafouz, 2014).

For teachers to whom English is L2, their limited L2 expressive and didactic capabilities constitute a factor that can detract from the quality of their teaching; for students with limited capabilities in L2 increased pressure on their working memory comes in as an additional and interacting factor that can reduce the quality of the learning process.

Future research on this topic should focus on didactics, educational interaction, the cognitive learning process, academic performance, and workloads. The best approach would be a randomized controlled trial with initial, end, and follow-up measurements, in which the same courses are taught in both Dutch and English by the same lecturers (near native speakers) and students are allocated at random to one or other language group (L1 versus L2). The dependent variables should be objective

indicators of didactics, the subject-specific learning process, and linguistic proficiency. Self-reporting by means of questionnaires or interviews designed to elicit personal opinions rather than objective measurements is unsatisfactory for this purpose, since social desirability and norm shifts inevitably come into play to a considerable extent.

There is also a dearth of research deconstructing linguistic proficiency into component skills, and of impact studies encompassing cognitive processing, memory capacity, and time on task.

In order to assess the true merits of the quality-enhancing effects attributed to the so-called ‘international classroom’ in policy documents, the validity of the underlying suppositions needs to be evaluated. Moreover, the composition of learning groups and the nature of educational interactions should be studied as they relate to academic performance.

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