

MOTIVATIONS AND CHALLENGES OF AN ENGINEERING LECTURER TO IMPLEMENT EMI AND INNOVATIVE METHODOLOGY

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THEORETICAL BACKGROUND

- English-medium instruction (EMI) courses and programs: among the actions that drive internationalization in European higher education institutions (Wächter & Maiworm, 2014), although with costs and benefits (Macaro, 2018)
- Bottom-up policies in EMI implementation at the UPC, and in Spain (Dafouz-Milne, Camacho-Miñano, & Urquía-Grande, 2014)
- EMI lecturer's beliefs, perceptions and needs have been researched and analysed, usually from ESP/language perspectives. Teachers' personal initiative and motivations (Macaro, 2018; Dearden & Macaro, 2016; Aguilar & Arnó 2020; Arnó & Aguilar, 2021).
- EMI lecturers innovate teaching methodology as an outcome of EMI (Guarda & Helm, 2017 a/b)
- Collaboration content and ESP lecturers: innovation (Barreiro & Sancho Guinda, 2016;); EMI lecturers' recommendations (Airey, 2011).

MOTIVATION FOR THIS STUDY

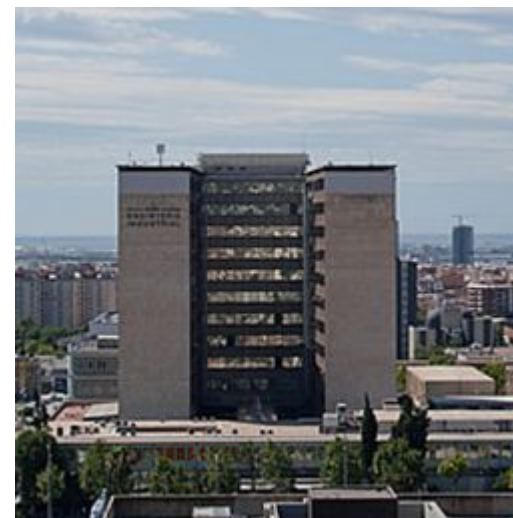
Part of ASSEMID & LIDISELF research projects

EMI-ESP: language, identities, disciplinary knowledge/literacies, ELF, teaching practices

Content lecturers as informants. Interviews and class observation, analysis by ESP lecturers

Marta (ESP) and Xavier (EMI) come from the same school, the Barcelona School of Industrial Engineering (ETSEIB), and teach in the two main academic programmes:

- Bachelor's degree in Industrial Technology Engineering
- Master's Degree in Industrial Engineering



MOTIVATION FOR THIS STUDY

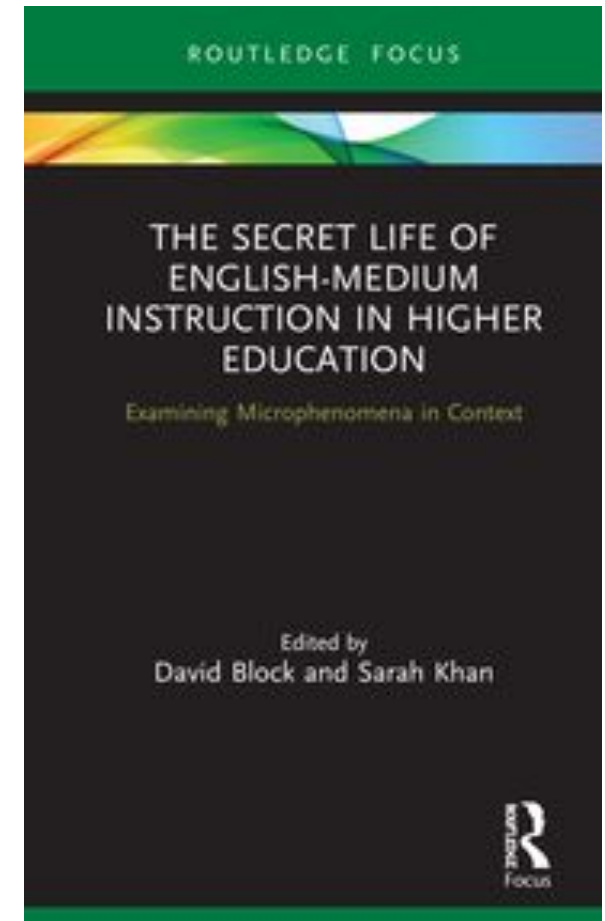
◦ **Content lecturer - ESP lecturer collaboration: Catalyst for the present study**

Inspired by a previous study: “The secret life of EMI”: Unveiling content lecturers’ views on EMI implementation (Arnó and Aguilar, 2021)

Profile of **Alberto** (Electronics): EMI as language switch -- interview analysis by ESP lecturers (EMI lecturer’s theorizing about EMI and own practice)

---> **This study:** A step forward, a different lecturer profile → EMI linked to methodology change

EMI lecturer interested in collaborating with ESP, innovation as common ground: Incorporating content lecturers’ analyses.



OBJECTIVES

1-Explore the drivers for both EMI and teaching innovation

2-Find out the extent to which they influence each other: does EMI implementation lead to content lecturers' reappraisal of their courses on a broader level or are innovative lecturers more prone to engage in EMI?

LECTURER'S BACKGROUND



UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

Departament de Mecànica de Fluids



Barcelona
Fluids & Energy
Lab

- I am teacher of the **Fluid Mechanics** Department of the Barcelona School of Industrial Engineering (ETSEIB)
- I have taught several subjects related to Fluid Mechanics in my mother tongue (LI) for 20 years:
 - Basic Fluid Mechanics
 - Hydraulic Machinery
 - Fluid Transport Systems
 - Flow Measurement and Instrumentation
- I am researcher at the Barcelona Fluids & Energy Lab of the UPC

LECTURER'S BACKGROUND



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- My English proficiency: advanced level but not certified
- In 2003 I volunteered to offer 2 optional courses for undergraduates in EMI:
 - Computational Fluid Dynamics
 - Distribution Piping Systems
- I have attended more than 30 courses on teaching methodologies, improvement of teaching and innovative pedagogy for engineering lecturers since 2007. Some examples are:
 - Introduction to the Teaching Portfolio
 - How do our students learn?
 - Practice of an active learning experience

Method

Evolution in research project → shift of perspective

September 2018 (content lecturer as informant, ESP analysts):

- Videorecorded 2 lessons at the beginning of the semester and at the end
- Interviewed some students (volunteers)
- Interviewed lecturer at the end of the semester (a semi-structured interview)

2021 (content lecturer as analyst, reflection on own teaching):

- VSR video stimulated recall techniques (Gazdag, Nagy & Szivák, 2019)
- Narrative inquiry (Johnson and Golombek, 2002)

Watched again the videoed lesson, paying attention to the following aspects and reflection on them:

Stimulated recall: suggested aspects

-- student participation (with respect to LI)

-- my fluency, elaboration & spontaneity in English

-- preparation of my lessons? More preparation in EMI (with respect to LI)?

-- my ppt slides and materials used: the same as in LI?

-- student performance in: Oral Presentations and Portfolio

--any innovative changes driven by EMI?

FINDINGS: STIMULATED RECALL (i)

1- Student participation vs. LI:

- Students do not participate voluntarily but they respond to my questions or comments if I ask directly
- I did not feel that they participate less due to the need to communicate in a different language
- The first day I clarify to them that their marks will not depend on their English level

2- Fluency, elaboration, spontaneity:

- As I am used to presenting work in English, I have the impression that my fluency was acceptable
- I was not preparing my lessons, so I think that I looked like quite spontaneous
- I think that when I talked, I made many incorrect English constructions, but that I was well understood

3- Preparation of classes:

- I only needed to review the slides a little bit before the class to remember the contents and to remember in advance the most important ideas or learning I had to focus on and convey
- I seldom had to look up in the dictionary the exact meaning of some specific words

FINDINGS: STIMULATED RECALL (ii)

4- PPT slides, materials are the same or not as in LI?

- The slides that I use in the CFD course are taken from the Internet or supplied by the software company in the form of summary of methods and settings, as well as workshops for practice
- The slides that I use in the Piping course are taken from LI courses and translated. And some new slides have been added based on English textbooks

5-Student performance?

- The student performance in the courses is quite good for most of the students that come to class and that try to follow the work plan
- Class attendance, exercise resolution, exam and team presentation are evaluated

6- Any innovation driven by EMI?

- The oral presentation in teams about the results of one workshop and a summary of the course learnings
- The Course Portfolio that they have to prepare and deliver at the end of the course

FINDINGS: REFLECTIVE PRACTICE

1- ANY INNOVATIVE PEDAGOGY OR CHANGE DUE TO THE SHIFT IN LANGUAGE (EMI)? DID INNOVATION PRECEDE EMI?

- Collect new vocabulary during initial readings and find out the meaning in the dictionary or internet
- Work in teams to solve a given exercise, prepare a powerpoint presentation and present the results to classmates

2- WHY DID I VOLUNTEER TO EMI? WHAT WERE MY MOTIVATIONS?

- Students can learn the technical words used in Fluid Mechanics that have previously heard in their mother tongue language
- Most of the state of the art of Fluid Mechanics that can be found in internet is written in English
- It contributes to encouraging the training of multilingual professionals
- The integration of the third language makes it easier for students to certify the corresponding competence
- It allows the student to work in a context similar to what he will find in companies where (s)he will develop his/her profession as an Engineer

3- REFLECTION ON IMPLEMENTATION. WHAT WENT WELL? WHAT CAN BE IMPROVED?

- Some students ask individual questions in their LI and do not switch to English

RECOMMENDATIONS given by the EMI lecturer

RECOMMENDATIONS

- Be yourself and do not worry about your English level when teaching
- Make the students work at the very beginning with readings so that they acquire the basic technical vocabulary to follow the lectures as soon as possible
- Give much information to the students so that they can work by themselves and overcome language difficulties without the help of the teacher
- Make the students write explanations and descriptions of the work carried out and not just present the numerical results

CONCLUSIONS by ESP specialists

The EMI lecturer:

- Not many differences between LI and EMI teaching in the EMI lecturer's stimulated recall.
- EMI *added value* : employability of students and multilingual practice. Sources (state of the art) are in English.
- Was already sensitised towards teaching innovation and with EMI he very easily integrated some innovative changes. **CHANGES**: collect vocab & work in teams + presentation and Portfolio. **Innovation and EMI go hand in hand** (though in this case Innovation is prior to EMI).
- He prioritises comprehension: he realises he's made mistakes but minimises them because they never hinder comprehension or content delivery.
- Confidence stands out as very important: personality + language competence + experience in teaching.
- His recommendations: pushing students towards the acquisition of **disciplinary knowledge** by exposing them to Specialised Texts (**Readings** with Specialised Vocabulary), making them **write (to explain and describe numerical results)** and pushing students to be independent, **autonomous** workers-----> **toward engineering practice.**

- Aguilar, M. & Arnó, E. (2020). 'He's a good lecturer in any language': Shifting from LI to English and implications for EMI training. In M. Mar Sánchez-Pérez (Ed.), *Teacher training for English medium instruction in higher education*. Hershey, PA (USA). IGI-Global.
- Ackerley, K., Guarda, M., & Helm, F. (Eds.) *Sharing Perspectives on English-Medium Instruction*. Bern: Peter Lang.
- Arnó, E., & Aguilar, M. (2021). Language Issues in EMI. In Block, D., & S. Khan (Eds.) *The secret life of English-Medium Instruction in Higher Education*. Routledge, pp,19-42.
- Airey, J. (2011). Talking about teaching in English. Swedish university lecturers' experiences of changing teaching language. *IBERICA*, 22, 35-54.
- Barreiro, P., & Sancho Guinda, C.(2016).A trans- disciplinary CLIL venture for promoting sci-tech innovation at the Technical University of Madrid. In Llizler,F., Garcia-Laborda, J.. & Tejedor, C. (Eds.) *Beyond the universe of language for specific purposes*. ISBN 978-84-16599-83-7,
- Dafouz-Milne, E., Camacho-Miñano, M., & Urquía-Grande,E. (2014). 'Surely they can't do as well':A comparison of business students' academic performance in English-medium instruction and Spanish-as-first-language-medium programmes. *Language and Education*, 28, 223-236
- Dearden, J., & Macaro, E. (2016). Higher education teachers' attitudes towards English medium instruction:A three-country comparison. *Studies in Second Language Learning and Teaching*, 6(3), 455–486
- Gazdag, E., Nagy, K., & Szivák, J.(2019). 'I spy with my little eyes':The use of video stimulated recall methodology in teacher training. *Intl Journal of Educational Research*, 95, 60-75.
- Guarda, M., & Helm, F. (2017a).A survey of lecturers' needs and feedback on EMI training. In Ackerley, Guarda & Helm (Eds.), pp.167-194.
- Guarda, M., & Helm, F. (2017b) 'I have discovered new teaching pathways': the link between language shift and teaching practice, *International Journal of Bilingual Education and Bilingualism*, 20:7, 897-913.
- Johnson, K., & Golombek, P. (2002) *Teachers' Narrative Inquiry as Professional Development*. Cambridge University Press.
- Macaro, E., Curle, S., Pun, J., An, J., & Dearden, J. (2018).A systematic review of English medium instruction in higher education. *Language Teaching*, 51, 36-76.
- Wächter, B., & Maiworm, F. (2014). *English-taught programmes in European higher education*. Bonn: Lemmens