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Teaching approaches and language proficiency among teachers in English-medium education: exploring correlations and pedagogical implications

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ABSTRACT

Whether teachers in English-medium instruction (EMI) contexts possess adequate English skills to teach in their disciplines is widely debated in internationalized higher education. From such debates emerges the assumption that EMI teachers' approach to teaching is associated with their level of English proficiency; crucially, however, empirical evidence of such a connection is missing. To begin exploring this relationship, this study correlated Scandinavian-based EMI teachers' ($N = 82$) scores from English proficiency testing with their responses from a self-assessment of teaching approaches. No correlation was found between English proficiency and a student-focused teaching approach. However, there was a statistically significant negative correlation between English proficiency and a teacher-focused approach, indicating that teachers with lower English skills are likelier to adopt a teacher-focused approach. These findings underscore the complex relationship between EMI teachers' language proficiency and instructional approaches.

Introduction

English-medium instruction (EMI) – i.e., the use of English for instructional purposes in higher education (HE) settings where at least some teachers and students have another L1 than English – is becoming more prolific around the world, not least in Scandinavian HE (Agnew & Neghina, 2021). In EMI settings, where most lecturers are teaching in second/foreign (Lx) English, questions have been raised about how the use of Lx English – and EMI teachers' English proficiency specifically – might affect their teaching of disciplinary content (e.g., Guarda & Helm, 2016; Macaro, 2020).

Some research has suggested that the language of instruction may affect the pedagogical strategies teachers adopt, with a concomitant impact on students' content learning (e.g., Dang et al., 2023; Lavelle, 2016). Classroom observation in EMI (Lasagabaster & Doiz, 2021) indicates that much EMI teaching tends to be teacher-focused (characterized by monologic and transmissive teaching) rather than student-focused (enabling dialogic and engaged learning), resulting in students' adopting surface, rather than deep, learning approaches (Marton & Säljö, 1976). Assuming, as many do (see e.g., Zhou et al., 2023), that the adoption of teaching strategies fostering deep learning by EMI teachers is essential for effective learning in EMI, teaching that diverges from this approach should raise concerns. Some previous research (Lavelle, 2016) has attempted to relate

teachers' teaching approaches to their English proficiency, arguing that teachers who have a low(er) level of English proficiency are more likely to adopt a teacher-focused teaching approach and that a high level of teaching language proficiency is needed to engage students in active, deep level learning. However, no study to date has provided empirical evidence of an actual connection between English proficiency and teaching approaches (Lasagabaster, 2022).

Thus, this exploratory study sets out to investigate this relationship. Guided by this main research question – *What is the relationship between the English language proficiency of EMI teachers and their teaching approach?* – the paper correlates EMI teachers' scores from English proficiency testing with their self-assessment of teaching approaches; in this study we make use of the Approaches to Teaching Inventory/ATI (Trigwell & Prosser, 2004), which captures teachers' self-reported teaching approaches along two dimensions: teacher-focused (TF) and student-focused (SF). Importantly, the use of the ATI in this context raises another research question: *To what extent do the TF and SF dimensions of the ATI function as distinct constructs in the context of EMI teaching?* The findings of this paper will shed further light on the intricate relationship between the language proficiency of EMI teachers and their pedagogical approaches, offering insights for teachers as well as policymakers aiming to enhance the EMI learning experience.

Literature review

In a recently published book, Breeze and Sancho Guinda (2021) provide guidance for higher education teachers involved in EMI and offer a "profile" of the EMI teacher, recommending the adoption of a student-centered approach where teachers "encourage mutual scaffolding and exchangeable learning roles among students … to foster learner curiosity, and through it self-discovery and autonomous learning" (2021, pp. 29–30; 28).

Consistent with a broader constructivist shift toward learner-centered pedagogy, the literature on EMI teaching places a pronounced emphasis on students and their needs. This emphasis can be attributed to the widely held perception that, too often, EMI teaching is focused on the teacher and "delivery" of course contents, despite "an urgent need to move … to a more student-centered approach" in EMI (Lasagabaster, 2022, p. 25). Such a move, however, comes with expectations on proficiency in the medium of instruction. According to Guarda and Helm (2016, p. 908): "the implementation of EMI and of student-centered teaching strategies requires [EMI teachers] to be highly proficient in the foreign language in order to understand their students and, for instance, be able to moderate classroom discussions."

Whether or not EMI teachers have the required English skills to teach in their disciplines remains a much-debated issue, and while EMI researchers have long shown a keen interest in this question, research findings reveal a range of differing viewpoints. For example, O'Dowd (2018) highlights significant concerns at European universities regarding instructors' English language competence, such as the lack of clear qualifications or accreditations for EMI teachers and challenges related to teachers' communication skills. Nearly 68 percent of the 70 participating universities in O'Dowd's survey provided some form of training, predominantly focusing on teachers' English proficiency (while there was little guidance on bilingual teaching methods); still, respondents (administrators occupying different roles at their universities) expressed the view that current support and training for teachers was insufficient (O'Dowd, 2018). By contrast, Wächter and Maiworm's (2014) research of English-taught programs in Europe portrays administrators expressing confidence in the English proficiency of their staff. According to their survey, 95 percent of administrators determined that the English proficiency of their academic staff was either good or very good.

This persistent stakeholder interest in EMI teachers' English skills is indicative of a larger issue – the possibility that EMI teachers' (allegedly) poor English skills somehow negatively impact teaching (and ultimately students' learning). In this regard, several voices in the literature hint at a connection between the English proficiency of EMI teachers and their pedagogical approaches. For example, Lavelle, lamenting the tendency of his EMI colleagues ("in disquieting numbers") to

assume a "transmitter role" as teachers, talks of potential "global changes in teacher performance" in the wake of EMI since "teaching through L2 English may alter a teacher's conception of his role as a teacher" (2016, p. 141). A similar view is expressed in several of the studies reviewed by Dang et al. (2023), causing them to "attribute the dominant teacher-centered and less interactive EMI classrooms to the educators' insufficient English proficiency" (p. 851). From such reasoning emerges an assumption that EMI teachers with a low level of English proficiency are more likely to adopt a teacher-centered teaching approach than those with higher proficiency. Such an assumption is to some degree supported by research with other groups of teachers operating in English Lx; Dewaele and Leung (2022) found that higher English proficiency in English-as-a-foreign-language teachers was positively correlated with their classroom practice; "higher proficiency is linked to better self-perceived classroom management, pedagogic and didactic skills … The [lower proficiency] group scored significantly lower on classroom practice than the [higher proficiency] group" (p. 24). Collectively, this research highlights the importance of considering English proficiency in relation to teachers teaching in English, and how it might influence their instructional methods.

It is beyond the scope of this paper to review the extensive literature on approaches to/conceptions of teaching. Here, we adopt the widely used approaches-to-teaching framework developed primarily by Trigwell and Prosser (Prosser & Trigwell, 2006; Trigwell et al., 1999; Trigwell et al., 2005; Trigwell & Prosser, 2004) to theorize and operationalize the relationship between teachers' English proficiency and effective teaching, drawing on the framework's general adaptability and utility to highlight "relations between approaches to teaching *and other elements* of the teaching-learning environment" (Trigwell & Prosser, 2004, p. 421, emphasis added).

Grounded in phenomenography, the framework assumes a fundamental distinction between a conceptual change/student-focused (CCSF) approach and an information transmission/teacher-focused (ITTF) approach (Trigwell et al., 2005, p. 352):

> **Conceptual change/student-focused (CCSF) approach**: … a student-focused strategy with the aim of changing students' ways of thinking about the subject matter. [Teachers] focus their attention on the students and monitor their perceptions, activity and understanding. Transmission is seen to be necessary, but rarely sufficient. They assume students construct their own knowledge, so the task of the teacher is also to challenge current ideas through questions, problems, discussion and presentation. This approach includes a mastery of teaching techniques, including those associated with transmission, but this is seen as an empty display without learning.

> **Information transmission/teacher-focused (ITTF) approach**: … the focus is on what they do as teachers, or on the detail—individual concepts in the syllabus or textbook, or the teachers' own knowledge structure—without acknowledgement of what students may bring to the situation or experience in the situation. They see their role as mainly transmitting information based upon that knowledge to their students.

Across various studies (e.g., Trigwell et al., 2005; Trigwell & Prosser, 2004), the framework founders have presented an argument for associations between, on the one hand, an ITTF approach and students' tendency to adopt a surface learning approach and, on the other hand, a CCSF approach and students' tendency to adopt a deep learning approach. The fundamental disparity between deep and surface approaches to learning lies in the depth of comprehension and engagement. Crucially, students are not inherently inclined to be either deep or surface learners; their approach is predominantly shaped by the educational environment. In this context, the learning conditions established by teachers, which are influenced by their teaching approach, play an important role.

To operationalize the ITTF/CCSF framework and promote its adoption in teaching and learning development contexts, Trigwell and Prosser designed the Approaches to Teaching Inventory (ATI), enabling them (and others) to study "the relations between variation in science teaching and how that variation relates to variation in science learning" (Trigwell et al., 2005, p. 352). The ATI has, however, been used in diverse contexts beyond the original intentions of the designers, e.g., to identify the impact of pedagogical training on teaching styles (Cassidy & Ahmad, 2021) and to study teachers' self-efficacy (Smith et al., 2023). Even though Trigwell et al. (2005) focused on science teachers, many researchers have used the ATI framework to investigate university teachers

from a range of fields (e.g., Eley, 2006; Mladenovici & Ilie, 2023). In this study, we used the instrument with teachers working in an environment very similar to the "original" context: teachers of science and technology in higher education.

Despite its widespread use, the ATI has faced criticism, with some researchers questioning its theoretical basis, design and application. For instance, Meyer and Eley (2006) question the conceptualization and psychometric basis of teaching approaches, particularly the two scales (ITTF and CCSF). Moreover, Meyer and Eley argue that rather than separate constructs, ITTF and CCSF occupy the extreme points along a continuum. Other scholars have also argued that the ITTF-CCSF dichotomy is an oversimplification, a binary construct failing to capture the complete spectrum of dimensions relevant in a model of teaching approaches (cf. Åkerlind, 2004; Postareff et al., 2023). However, despite the critique directed towards it, previous studies have consistently shown that the ATI effectively measures two separate constructs – CCSF and ITTF (cf. Gómez-Carrasco et al., 2022; Mladenovici et al., 2022; Prosser & Trigwell, 2006). Thus, it can be argued that the ATI offers a meaningful yet generalized picture of teachers' self-perceived attitudes toward these two constructs (and no other constructs) in a specific context.

In Prosser and Trigwell's framework, a "relational perspective" that focuses on the interconnections and relationships between various elements within the teaching and learning process and environment is central. This perspective emphasizes the dynamic interactions between teachers, students, content, and context. Speaking about the relational perspective, Prosser and Trigwell (2006, p. 416) note that "from this perspective, approaches to teaching (or learning) are seen as being contextual or relational, and the approach adopted by a teacher in one context may not be the same as the approach the same teacher would adopt in a different context." Following Lavelle (2016) and others, we contend that *the specific context provided by EMI*, and many EMI teachers' perceived challenges associated with teaching in Lx English, might impact their approach to teaching and learning in the EMI classroom. Thus, in the case of teaching and learning in EMI, one "other element" of the environment is the medium of instruction and teachers' proficiency in that medium (we readily acknowledge that aspects beyond language can influence EMI teachers' approach to teaching, cf. Sahan et al., 2021). On this assumption, teachers with a high level of English proficiency might be seen as more likely to leverage their English proficiency to adopt a versatile teaching approach, adjusting their pedagogy (drawing on a CCSF and ITTF approach) based on the learning demands of the situation. When required, EMI teachers with a high level of English proficiency might employ a student focus, facilitating active learning strategies and encouraging critical thinking while offering ample opportunities for in-depth exploration of topics, all of which resonate with the preferences of deep learners. Similarly, it can be hypothesized that EMI teachers with lower English proficiency may operate with restricted adaptability, relegating them to employing an ITTF approach in EMI settings. Out of necessity, EMI teachers with limited English skills would then be more likely to resort to rote instruction or simplified explanations, potentially promoting surface learning through an ITTF approach.

To conclude this review; findings from EMI classroom research suggest (i) that EMI teachers frequently resort to a monologic/lecturing type of teaching, i.e., an ITTF approach where "student-teacher interaction is conspicuous by its absence" (Lasagabaster, 2022, p. 25); and (ii) that a possible cause for this preference for an ITTF approach is the level of English proficiency. The purpose of this study is to explore in more detail the relationship between EMI teachers' level of English proficiency and their teaching approach.

Methods and data

Two main types of data were drawn upon to investigate the relationship between the English language proficiency of EMI teachers and their teaching approach: scores from tests investigating EMI teachers' vocabulary knowledge and the teachers' responses to self-assessment of their teaching

approach. In the present paper, we are repurposing vocabulary knowledge test scores originally presented in a separate study (Malmström et al., 2023) for correlation analyses within the framework of our current research.

Participants and study context

Participants in this study were a purposeful sample of predominantly early career EMI teachers (*N* = 82) recruited across three Science, Technology, Engineering and Mathematics (STEM) faculties in Sweden. All three universities from which the teachers were recruited employ EMI to a high/very high degree, especially for second and third cycle study levels. At two of the institutions, all advanced level education is offered through the medium of English; this is true for many HE institutions in Sweden, especially in the STEM areas of education. Expectations concerning students' and teachers' English proficiency are high in this context. Students, domestic and international alike, are expected to have English proficiency at least at the B2 level of the Common European Framework of Reference. Perhaps surprisingly, lecturers teaching in EMI contexts in Sweden, whether domestic or international, are typically not required to certify their English proficiency before starting teaching.

The linguistic diversity of the teacher sample – with 22 reported different first languages (L1s) – is reflective of the diversity of the teaching force in Sweden's highly internationalized higher education sector; in 2023, 38 percent of all university staff involved in teaching and research in Swedish HE had a foreign background (Statistics Sweden, 2023).

The teachers who were recruited for this study were attending a higher education pedagogy course at the respective institutions. This type of course is typically a requirement to teach in Swedish HE, and teachers recruited to Sweden are expected to attend such a course within 12–24 months of their arrival. The course syllabus covered general topics relating to teaching, learning and assessment, but included no component dedicated to teaching in EMI contexts (generally speaking, in Sweden, there is little pedagogical or other tailored support available for teachers engaging in EMI).

The teacher participants had varying degrees of pedagogical experience, with 72 having taught between one and three years, and ten having more extensive teaching experience. Only teachers with reported experience from teaching in EMI were included in the study.

Study participation was entirely voluntary – the EMI teachers self-selected to participate – and all participants provided their informed consent. The study was fully compliant with all obligations imposed by Swedish law on research ethics when conducting research with human participants.

Measures of English proficiency

For the purposes of this study, a key dimension of English language proficiency, vocabulary knowledge, was used as an indicator of overall English proficiency, because it is widely assumed that vocabulary knowledge is a good predictor of overall language performance (Milton, 2013). Based on the assumption that EMI teachers need to draw on a broad repertoire of vocabulary when teaching/interacting with students, four different types of vocabulary were tested: *receptive general* as well as *receptive academic* vocabulary knowledge (using the Vocabulary Levels Test/VLT, Schmitt et al., 2001, and the Academic Vocabulary Test/AVT; Pecorari et al., 2019), and *productive general* as well as *productive academic* vocabulary knowledge (using the Productive Vocabulary Levels Test/PVLT; Laufer & Nation, 1999), and the Productive Academic Vocabulary Test/PAVT, Pecorari et al. (In press). The VLT and the AVT, measuring receptive knowledge at the level of form-meaning recognition, are both matching tests. As tests of controlled productive vocabulary knowledge, the PVLT and the PAVT ask test takers to produce a target word deleted from a sentence based on a prompt (the initial letters of the target word). An overview of the vocabulary tests adopted in this study is provided in Table 1.

Table 1. Overview of the vocabulary tests used.

Test	Test format	Vocabulary knowledge measured	Maximum score
Vocabulary Levels Test	Matching (each test item contains three definitions and three target words, along with three distractors, and test takers should match definitions, e.g., "mix together", with target words, in this case "blend").	General receptive (meaning-recognition)	90
Academic Vocabulary Test	Matching (each test item contains three definitions and three target words, along with three distractors, and test takers should match definitions, e.g., "a difference between two things", with target words, in this case "divergence").	Academic receptive (meaning-recognition)	57
Productive Vocabulary Levels Test	Written production (test takers should produce a target word deleted from a sentence based on a prompt (the initial letters of the target)).	General productive (controlled)	54
Productive Academic Vocabulary Test	Written production (test takers should produce a target word deleted from a sentence based on a prompt (the initial letters of the target)).	Academic productive (controlled)	52
			Total: 253

Binary scoring was utilized for all four vocabulary tests. For the productive tests, a stringent binary scoring approach was implemented, requiring answers to be entirely correct in terms of spelling (allowing for standard regional variations) and grammatical form.

In this study, we opted to use a *combined* score for vocabulary knowledge in all analyses. Our rationale is that a combined score, encompassing receptive, productive, general, and academic vocabulary knowledge, offers a more comprehensive and valid measure of teachers' English proficiency for teaching in line with the demands of EMI settings, where teachers must draw on *all* these forms of vocabulary knowledge. The combined score measure is hereafter referred to as EP (English Proficiency, based on the total vocabulary score).

Self-assessment of teaching approach

To investigate the relationship between teachers' English language proficiency and their teaching approaches, the ATI-R by Trigwell et al. (2005) was administered (with minor changes, see below). We contend that our use of the ATI-R is consistent with the intentions for which it was designed, i.e., as "a way of collecting data for the analysis of relationships between approaches to teaching and other elements of the same teaching-learning environment" (Prosser & Trigwell, 2006, p. 416).

The ATI-R, developed and revised by its creators over time (e.g., Trigwell et al., 1999, 2004; Trigwell et al., 2005), consists of 22 items designed to measure two primary dimensions: Teacher-Focus (TF) and Student-Focus (SF), with 11 items dedicated to each dimension (from this point onwards, we adopt the TF/SF terminology associated with the ATI/ATI-R rather than the more expansive acronyms ITTF/CCSF). For each ATI-R item, respondents indicate their answer on a 5-point Likert scale ranging from "Only rarely true" to "Almost always true", with no labels for scale points between the two extremes. The ATI-R statements were prefaced with the following text to remind respondents that they were answering the questions in this specific context: "As you answer, imagine yourself as the teacher of a course, at this university or elsewhere, in which English is used as the medium of instruction, i.e., as a teaching language used for all or most types of interaction with students in the classroom."

The statements are all positively expressed, meaning that a higher score indicates a stronger stance in the targeted approach, while a lower score indicates a weaker stance. However, a teacher may report high values on both components or low values on both, i.e., a high TF approach does not necessarily imply a low SF approach, and vice versa.

During the initial analyses, items 14 and 18 (SF) and items 11 and 22 (TF) of the ATI-R exhibited unfavorable values in the reliability and factor loadings, suggesting potential misalignment with

their intended dimensions. It is beyond the scope of this paper to offer a deeper quantitative analysis of the ATI-R items. However, the four misaligning items were excluded from further analysis to maintain theoretical coherence of the two dimensions.

Following the removal of the four items, the mean score for each participant was computed for both the teacher-focus and student-focus dimensions. These mean scores represent participants' overall orientation towards teacher-centered or student-centered teaching approaches.

Analyses

SPSS was employed to conduct the statistical analyses.

The maximum possible English proficiency score (EP) was 253 points, but the highest observed score was 240 points. The mean was $M = 194.48$ (95% $CI = 185.7–203.25$; $SD = 39.92$) with a median of $Mdn = 204$, which indicates that the distribution is pushed to the upper range, which is also indicated by the slight negative skewness ($-.733$). The internal consistency of the 253 items is almost perfect, alpha = .99. These characteristics support the use of the vocabulary score as a reliable variable in the main analysis, serving as a proxy for English proficiency.

Following the exclusion of four items from the ATI-R after the initial analyses, we assessed the reliability of the remaining 18 items (9 SF and 9 TF) using Cronbach's alpha and the factorial structure using Principal Component Analysis (PCA). Descriptive statistics informed of the central tendencies of the ATI-R within the sample.

In the main analysis, the two mean scores (SF and TF) computed from the ATI-R responses were correlated with participants' EP score obtained from the vocabulary tests administered concurrently. As the EP distribution was not fully normal, Spearman's rho was used for the correlations. This correlation approach allowed for an examination of the extent to which teachers' teaching orientations are associated with their language proficiency levels.

To better understand differences in teaching approaches based on English proficiency, it may be justified to consider extreme proficiency groups (the teachers displaying the highest and the lowest English proficiency, i.e., the highest and lowest quartiles). Although extreme group analyses must be treated with caution, "it sometimes may be appropriate to make claims about the presence and general direction of a relationship even if its size and shape are debatable. If resources are limited or if research is still in the exploratory stage [extreme group analysis] can sometimes be used to enhance the detectability of effects" (Preacher et al., 2005, p. 190). Acknowledging Preacher's caution, a t-test was performed to compare differences in teaching approaches between the first and fourth quartiles on the proficiency scale.

Results

Validation of the ATI

Given the central role of the ATI-R in the study's findings, we begin by presenting the results of the ATI-R analysis. Readers are reminded that four items (two within each approach) were deleted due to misalignment with the intended construct during the initial analysis. Therefore, the results reported here build on the remaining 18 items. Following the ATI-R analysis, we address the focal question of the study.

The Student-Focus (SF) dimension demonstrated acceptable internal consistency with a Cronbach's alpha coefficient of .79, while the Teacher-Focus (TF) dimension yielded a slightly lower value of .68. None of the items increased the alpha if deleted.

Since the ATI-R is purportedly a two-dimensional instrument, a factor analysis was conducted to confirm this assumption. The results of the PCA indicated two primary dimensions, where all SF items loaded on the primary dimension and all TF items on the second largest dimension (see Table 2). Bartlett's test of sphericity revealed significance ($p < .001$), the Kaiser-Meyer-Olkin

Table 2. Factor loadings on the two primary dimensions of the ATI-R using PCA.

		Dimension 1	Dimension 2
SF items	Q3	.58	
	Q5	.64	
	Q7	.59	
	Q8	.49	
	Q13	.67	
	Q15	.70	
	Q17	.70	
	Q20	.62	
	Q21	.51	
TF items	Q1		.46
	Q2		.37
	Q4		.48
	Q6		.69
	Q9		.58
	Q10		.38
	Q12		.41
	Q16		.61
	Q19		.70

Note: Q = question (item) number in the ATI-R. PCA was set to suppress coefficients below .3.

measure yielded fair results (KMO = .64), and the eigenvalues of the first two dimensions were notably larger than the third, supporting the assumption that the ATI effectively captures the intended dimensions.

Given that the two preceding steps indicated favorable usage of the ATI-R as a broad and general way of measuring EMI teachers' SF and TF, the central tendencies were explored. A mean score for each approach was calculated for each participant. Group level descriptive statistics are presented in Table 3.

As can be seen in Table 3, both approaches receive a score above the midpoint on the 5-point Likert scale, with SF displaying a mean of $M = 3.82$ ($SD = .59$) and TF a slightly lower mean of $M = 3.46$ ($SD = .53$). All three central tendency values (mean, mode, and median) are higher for SF than for TF. SF also has a larger range than TF, with a minimum score below 2 and a maximum score of 5 (i.e., one participant selected the highest score of 5 for all nine SF items).

Additionally, the scatter plot in Figure 1 shows a dispersion of points, indicating no discernible relationship between the variables. This means that teachers may score high on both approaches, low on both approaches, or low on one and high on the other. This suggests that the two approaches are not distributed along a single continuum (contrary to some claims in the literature, e.g., Meyer & Eley, 2006). Instead, the scatter plot indicates that TF and SF should be treated as two distinct sub-dimensions of teaching approaches, aligning with the developers' intention.

Table 3. Descriptive statistics of the ATI-R.

		SF	TF
Mean		3.82	3.46
	95% CI	(3.70–3.94)	(3.34–3.58)
SD		.59	.53
	95% CI	(.50–.68)	(.45–.60)
Mode		4.11	3.78
Median (50th percentile)		3.78	3.50
25th percentile		3.42	3.11
75th percentile		4.22	3.78
Range		3.11	2.44
Minimum		1.89	2.33
Maximum		5.00	4.78

Note: CI = Confidence intervals were computed using 1,000 bootstraps; $N = 82$.
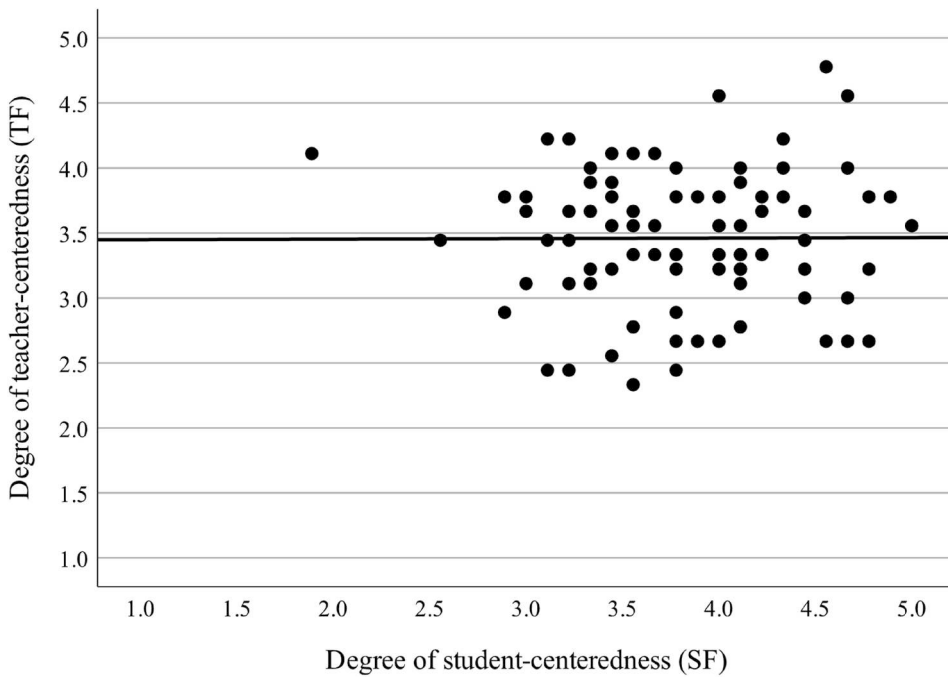
Figure 1. Scatter plot of the TF and SF means.

The relationship between English proficiency and the two ATI-R approaches

The primary focus of this study was to investigate the correlation between the English language proficiency of EMI teachers and their teaching approach. Table 4 presents the correlations using Spearman's *rho*.

As indicated by Table 4, there is no statistically significant relationship between teachers' language proficiency (EP), high or low, and a student-centered teaching approach (SF). Furthermore, there is no significant relationship between the two ATI-R dimensions (SF and TF), which indicates that teachers may vary in their responses across these dimensions (cf. the scatter plot above).

However, there is a statistically significant negative correlation between EP and TF ($\rho = -0.24$). While the correlation is weak, this is an indication that teachers with lower English proficiency are more likely to exhibit a more teacher-centered teaching approach compared to those with higher English proficiency.

Given the statistically significant relationship between EP and TF, additional analyses were conducted to investigate group differences. A *t*-test was used to explore the difference between low-achievers and high-achievers (1st and 4th quartiles), see Figure 2. The first quartile, i.e., the EMI

Table 4. Correlations between English proficiency (EP) and teaching approaches (SF = Student Focus; TF = Teacher Focus) using Spearman's rho.

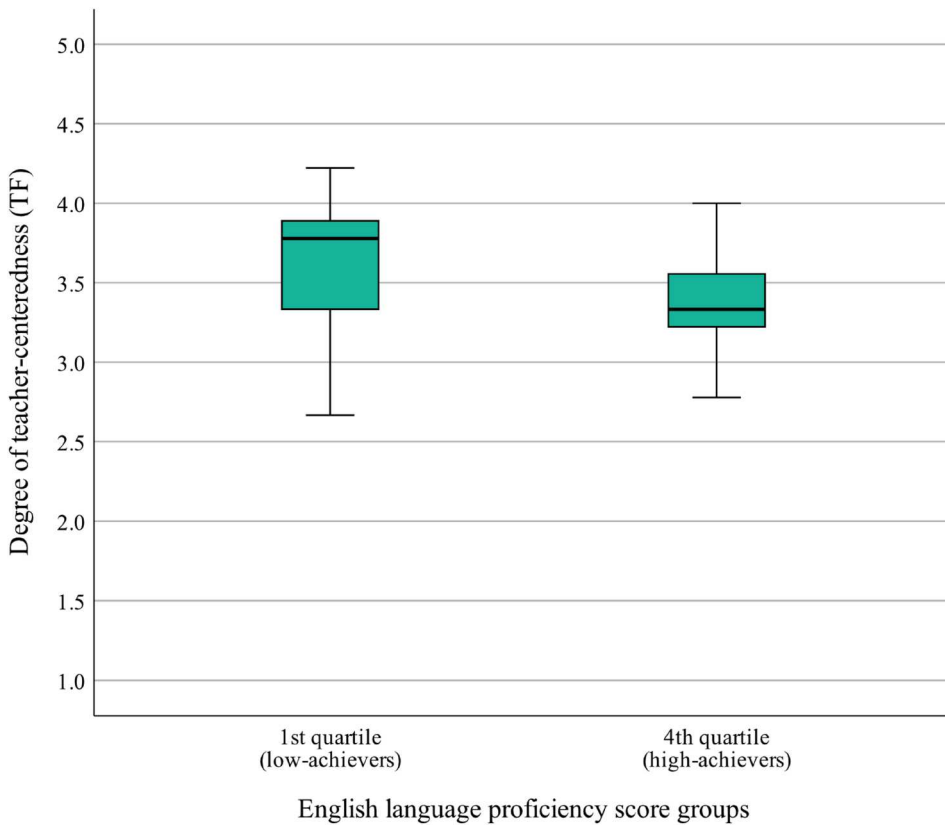|	EP	SF
EP	–	
SF	−.09	–
TF	−.24*	−.01

*p < .05.

Figure 2. Comparing the degree of teacher-centeredness 1st quartile vs 4th quartile.

teachers displaying the lowest level of English proficiency (M_{VOC} = 138.24, SD = 23.17, n = 21), demonstrated statistically significantly higher levels of teacher-centeredness (M = 3.63, SD = 0.51) compared to the fourth quartile (M_{TF} = 3.29, SD = 0.46), $t(39)$ = 2.24, p = .015. The fourth comprised the EMI teachers with the highest level of English proficiency (M_{VOC} = 237.90, SD = 5.30, n = 21). The assumption of equal variances was not violated (Levene's test, p > .05), suggesting that the variation observed was not due to chance. Teacher-centeredness, measured by the TF dimension of the ATI-R, showed a moderate effect size (Cohen's d = 0.7), indicating a meaningful difference between the two groups.

Discussion

The discourse on EMI teaching is rife with assumptions regarding English language proficiency, many of which remain unsubstantiated by empirical evidence. This exploratory study found no statistically significant correlation between EMI teachers' English proficiency test scores and their self-reported student-focused (SF) teaching approaches. However, a weak but statistically significant negative correlation was observed between English proficiency and a teacher-focused (TF) teaching approach. These findings lend *some* support to claims in the EMI literature about a connection between English proficiency and approaches to teaching but raise questions about the factors beyond English proficiency that influence instructional approaches in EMI contexts.

The results of this study challenge the widely held assumption in EMI research that EMI teachers predominantly (or only) adopt a TF approach. While our findings confirm that the ATI-R captures two distinct teaching approach dimensions – SF and TF - rather than a single continuum, teachers

in our study could score high on both approaches, low on both, or favor one over the other, reinforcing the need to view SF and TF as separate but coexisting constructs in EMI teaching. On average, the EMI teachers included in this research self-reported being both student-focused and teacher-focused as indicated by the central tendency measures. This dual nature of EMI teachers' self-reported teaching approach is consistent with findings from other contexts where the ATI (or ATI-R) has been employed. For instance, Mladenovici et al. (2022) found that teachers from multiple disciplines adopted both SF and TF approaches. Thus, even if SF and TF should be treated as distinct teaching approaches, they are not mutually exclusive in practice: "one can be effective in transmitting information to students and simultaneously encourage them to question their understanding of the subject matter" (Mladenovici et al., 2022, p. 269). At the group level, the mean values of the EMI teachers' self-reported SF approach exceeded those of their TF approach. EMI teachers thus acknowledge the utility of an SF teaching approach in the context of their EMI teaching, contrary to claims made in the literature (e.g., Lasagabaster, 2022).

Another widely held assumption is that EMI teachers' teaching approach – whether SF or TF – is contingent on their level of English proficiency. Specifically, it has been suggested that the adaptability and flexibility of an SF approach require high English proficiency, whereas teachers with lower proficiency are constrained to a more limited pedagogical repertoire characteristic of a TF approach. The finding that there is no statistically significant correlation between English proficiency and an SF approach reported casts some doubt on this assumption. One possible explanation for this finding is that an SF approach is influenced more by pedagogical training and/or pedagogical awareness than by language proficiency. Teachers with strong backgrounds in student-centered pedagogy may implement an SF approach regardless of their English skills (in this regard it would have been valuable to be able to tap into differences in the teachers' L1 vs. English Lx teaching approach, but this was beyond the scope of the study). In the Swedish context of this research, as noted earlier, teachers at all levels are expected to attend higher education pedagogy courses, where the benefits of an SF approach over a TF approach is a central theme. This emphasis on student-centered teaching could perhaps explain why a high proportion of EMI teachers in this study reported adopting an SF approach, regardless of their English proficiency. Another possibility is a threshold effect, meaning that if a teacher can communicate effectively, explain concepts clearly, and manage classroom discourse without language-related difficulties, additional English proficiency may not influence whether they adopt a SF or TF approach. Instead, other factors, e.g., disciplinary expectations, may be more relevant. In some disciplinary contexts, a lecture-based TF approach may be the norm, even for highly English proficient teachers. While we cannot control for the specific teaching realities of the EMI teachers in our study, it is worth noting that teacher-centered, front-of-the-classroom teaching is common across many STEM disciplines; such disciplinary norms may have a greater influence on instructional approaches than English ability.

However, our results do point to a relationship between English proficiency and a TF approach: a statistically significant (albeit weak) negative correlation between English proficiency and a TF approach indicates that EMI teachers with lower English proficiency levels may be more inclined than teachers with a higher level of English proficiency to adopt a TF approach. This finding aligns with claims made in earlier literature (Dang et al., 2023; Lasagabaster, 2022; Lavelle, 2016) and, taken at face value, this finding could highlight potential problems for EMI teaching. The reduction of teacher-student interaction, driven by an overemphasis on a TF approach in EMI might lead to decreased participation, a diminished sense of agency, and lower overall motivation on the part of the students (cf., Breeze & Sancho Guinda, 2021). Similarly, a TF approach in EMI – a learning environment already constrained by the students' engagement with the disciplinary content in Lx English – could lead to passive learning if students primarily "receive" information rather than actively engage with it, because research in EMI has shown that students learn actively (adopting a deep learning approach) from discussions and autonomous discovery (e.g., Rose, 2021), but this does not happen when students are deprived of such active learning opportunities. In addition, if the EMI teacher is the sole source of information and communication in the classroom, students

might not benefit from peer learning and other sources of learning input. In the same way, students might not enhance their English proficiency, which is one of the reasons students might choose an EMI course/program; e.g., Wilkinson (2018) states that students in teacher-focused settings are unlikely to strengthen their productive language competencies.

However, it should be stressed that a TF approach is not per se an indication of inferior pedagogy – e.g., EMI students may find the structured focus on the teacher/content beneficial and aiding their comprehension, particularly if *their* English proficiency is limited, (cf. Hellekjær, 2010). Ideally, though, EMI teachers should have the freedom to choose between an SF and a TF approach to optimize learning opportunities for students across EMI learning environments. The challenge arises, therefore, if EMI teachers' freedom is limited due to a low level of English proficiency. In this regard, the findings highlight the importance of empowering EMI teachers to implement teaching approaches based on their pedagogical and linguistic expertise *and* contextual factors (the medium of instruction), aligning with Prosser and Trigwell's relational perspective (2006).

Empowering EMI teachers can involve both supportive and regulatory measures. Recognizing the significance (and, in some cases, limitations) of English proficiency among EMI teachers, many educational institutions have instituted professional development initiatives tailored to enhance teachers' language skills (O'Dowd, 2018). While such initiatives (programs/courses/workshops) may be beneficial, particularly for teachers whose English proficiency is at the lowest end of the spectrum, teachers would also benefit from pedagogical training, especially bilingual teaching pedagogy (O'Dowd, 2018). This way, teachers can learn strategies to navigate *around* linguistic challenges while maintaining effective instruction. The specifics of what such professional development should entail remain an open question, and Breeze and Sancho Guinda (2021, p. 48) state that "there is no 'one fits all' solution … to become better EMI teachers." Even so, the same researchers also note how "the change to EMI is an invitation for lecturers to revisit their teaching activity and renew their approach, within the limit of what they themselves regard as productive and legitimate" (Breeze & Sancho Guinda, 2021, p. 194). Thus, professional development emerges as a crucial avenue for empowering EMI teachers, enabling them to develop their proficiency in the medium of instruction as well as their pedagogical skills.

Research flagging potential limitations in teachers' English proficiency – and the potential pedagogical consequences of these limitations – inevitably also raises the question of certification for EMI teachers. It would be tempting for HE institutions to demand that all EMI teachers undergo English proficiency certification. However, setting rigid proficiency benchmarks risks reinforcing monolingual norms, despite EMI operating in a multilingual context where English functions as *a lingua franca* and is used flexibly rather than requiring native-like proficiency. Just as pre-service training of EMI teachers and professional development initiatives should encompass more than a focus on English language competence, certification of EMI teachers should involve more than the assessment of their English proficiency (or English as part of their multilingual repertoire). This, however, is riddled with complexity, as highlighted by, e.g., Dimova and Kling (2022), and it remains unclear how, if at all, a focus on instructional approaches might be integrated into such a certification/accreditation approach.

While this study establishes that English proficiency affects EMI teachers' instructional approach to some degree, the weak correlation recorded suggests that other interrelated factors also contribute to EMI teachers' pedagogical choices. Teachers' self-efficacy is a case in point; previous research has shown that teachers with lower levels of English proficiency display lower levels of teaching confidence (e.g., Pun & Thomas, 2020; Wang, 2021), and other studies confirm that teachers with more self-efficacy in their teaching are more inclined to use an SF approach (e.g., Cao et al., 2018; Kaye & Brewer, 2013). By extension, therefore, the fact that teachers with lower levels of English proficiency are less confident in their teaching might also help explain why these teachers are more prone to use a TF approach. Studies focused on teachers' English proficiency consistently underscore the importance of considering it in conjunction with other variables, rather than in isolation. Indeed, Dewaele and Leung (2022, p. 29) note how "the relationship between teachers'

[English] proficiency and teaching ability is complex and highly dynamic with several interacting variables." Future research should incorporate additional factors in the research design, such as self-efficacy and pedagogical training, to provide a more comprehensive understanding of the inter-related influences on teaching in EMI.

This study has limitations worth noting. Firstly, it is not known to what degree the findings reported here can be generalized to other groups of EMI teachers as the sampling of participants was not randomized. While there is a possibility of a self-selection bias, there is no indication that the study disproportionately attracted teachers biased toward either an SF or TF teaching approach. Even so, the sample included was of limited size, and it comprised teachers only from the STEM disciplines. Future research in this area should broaden its focus to include other disciplines and, ideally, involve larger numbers of teachers. Secondly, the main research instrument used in this study, the ATI/-R, has some known detractors (highlighted in the literature review). The ATI/-R continues to evolve and inspire the design of other similar and improved instruments. We regret not having access to a more recent instrument at the time of data collection, the Higher Education Approaches to Teaching (HEAT) developed by Postareff et al. (2023), which seems to address some of the limitations of the ATI/-R and, critically, adds a scale of teaching self-efficacy which could have been useful for our purposes. Thirdly, it is crucial to remember that the results of the ATI/-R solely reflect how the teachers *think* they teach. Future research could enhance our understanding in this area by supplementing the ATI/-R with classroom observations or interviews (or other qualitatively oriented methods) to capture teachers' approaches *and practices* more comprehensively. Finally, it is worth noting that the correlation between low English proficiency and a TF teaching approach rests on our adoption of a "limited" measure of English proficiency: vocabulary knowledge. While central to English proficiency, vocabulary knowledge is by no means the only dimension of English relevant for EMI teachers. We can only speculate what a more comprehensive measure of English proficiency might have resulted in (whether a stronger correlation, or no correlation at all). A more nuanced measure of language proficiency, encompassing various linguistic dimensions, would arguably provide deeper insights into the relationship between EMI teacher English competence and teaching approaches in EMI settings.

Conclusions

This exploratory study aimed to investigate the relationship between English language proficiency and teaching approaches among EMI teachers in Swedish higher education. The findings revealed no significant correlation between English proficiency and a student-focused teaching approach. However, a weak but statistically significant negative correlation was found between English proficiency and a teacher-focused approach, suggesting that teachers with lower English proficiency are more likely to adopt a teacher-focused approach.

Other factors, not investigated here, are also likely to play a crucial role in shaping EMI teachers' instructional approaches, e.g., pedagogical training, higher education pedagogy policy, self-efficacy, and disciplinary norms. Ultimately, while English proficiency appears to influence teaching approaches to some extent, effective EMI instruction depends on a complex interplay of language skills, pedagogical competence, and contextual factors.

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