**International Journal of Language Teaching and Education**
Juli 2020, Volume 4, Issue 1
E-ISSN: 2598-2303
P-ISSN: 2614-1191

# EMI in Vietnam: What High School Teachers Think and Do

**Thi Phuong Doan Nguyen[1], Van Loi Nguyen[2]**
[1]Nguyen Thi Minh Khai gifted high school, Vietnam
[2]Can Tho university, Vietnam

**How to cite this paper:**
Nguyen, T. P. D., & Nguyen, V. L. (2020). EMI in Vietnam: What High School Teachers Think and Do. *International Journal of Language Teaching and Education*, *4*(1), 36-52. https://doi.org/10.22437/ijolte.v4i1.8754

**Received:** February 17, 2020
**Accepted:** July 10, 2020
**Published:** July 31, 2020



## Abstract

The current case study was driven by a recent policy on using English as a medium of instruction (EMI) in the mainstream school system in Vietnam. It aimed to explore what science teachers believed and reported doing about EMI in teaching science subjects in the high school context. Nine EMI teachers of different science subjects at a specialized high school in the Mekong Delta of Vietnam participated in a semi-structured interview. Thematic analysis revealed the perceived positive impacts on teachers' and students' English proficiency, and negative influences on science content coverage. In practice, the teachers reported a focus on simple contents, explaining specialized terminologies and key concepts as the input. They mainly employed a lecture style and teacher initiation-student response interaction, switching between English and Vietnamese during their lessons. These results imply that EMI across the curriculum has the potential to improve English proficiency of students, but the EMI policy needs to consider its transparency in goals and communication to stakeholders especially teachers and school managers.

## Subject Areas

English as a Medium of Instruction

## Keywords

English as a medium of instruction, high school teachers, perception, practice

## 1. Introduction

English is serving as an international language connecting different peoples in different regions, at different levels and from different cultures (Crystal, 2012). In Southeast Asia, the ASEAN Charter signed in February 2009 made English the sole official working language of the association (Kirkpatrick, 2011). Indeed, English has been widely used in certain fields or more exactly as the language of science and technology (Alhamami, 2015; Lehtonen & Lönnfors, 2001; Yip, Tsang, & Cheung, 2003). This status has led to an emphasis on English education, specifically the implementation of English-as-a-medium-of-instruction (EMI) policy in many various educational systems worldwide. In Vietnam, following the issuance of Decision No. 1400/QĐ-TTg "Teaching and Learning Foreign Languages in the National Education System,

Phase 2008 to 2020" and Decision No. 959/QĐ-TTg "Developing the Gifted High School System, Phase 2010 to 2020" (MOET, 2010), strategies were devised to prepare young generations for sufficient English competence to work in an integrative context (MOET, 2008, 2010). In particular, the policy of teaching science subjects in English was issued and piloted in many gifted high schools.

However, the literature on EMI implementation has highlighted both benefits and problems. On the one hand, EMI is believed to improve teachers' and students' English proficiency, increase learners' accessibility to scientific references, enhance graduates' job prospects, and raise institutions' ranking (Alfehaid, 2018; Alhamami, 2015; Doiz, Lasagabaster & Sierra, 2011; Galloway, 2017; Hu, Li & Lei, 2014; Hudson, 2009; Tatzl, 2011). On the other hand, it encountered operational challenges namely lack of competent learners and teachers, insufficient resources and support, inadequate methodology, and especially causing negative impacts on students' academic performance and mental development (Başıbek et al., 2014; Byun et al., 2011; Doiz, Lasagabaster, & Sierra, 2011; Hamid, Nguyen, & Baldauf Jr, 2013; Kennedy, 2011; Shohamy, 2012).

In Vietnam, research on EMI in higher education has reported similar concerns regarding teacher and student readiness, and resource accessibility for EMI success (Vu & Burn, 2014). Few studies, however, have been conducted in the high school context (Linh, 2016; Nhan, 2013). In particular, research on science teachers' perception and practice of using EMI at high school level remains scarce. Therefore, this case study aimed to fill this gap by examining the case of a gifted high school where EMI has been piloted in Mathematics, Physics, Chemistry and Biology classes since the academic year 2014-2015. The following research questions were investigated:

1. What are the perceptions of science teachers at a specialized high school about EMI in teaching science subjects?
2. What are their self-report ways in which EMI classes are conducted?

## 2. Literature review

### 2.1. English as Medium of Instruction (EMI)

EMI has recently appeared as a worldwide educational trend; however, the milieu in which it evolves varies, and there has been to date little consensus on its definition. EMI is defined by Dearden (2014) as "the use of the English language to teach academic subjects in countries or jurisdictions where the first language (L1) of the majority of population is not English" (p.4). The instruction of content subjects in or through English apparently excludes the English language teachers or a focus on the language itself. Likewise, EMI as indicated by Madhavan and McDonald (2014) refers to teaching a subject in situations where there are no explicit language learning aims and English is not the national language. The overriding aim of EMI is the acquisition of content, academic, or subject-related knowledge.

Doiz, Lasagabaster and Sierra (2011) use EMI as a synonym with CLIL (content and language integrated learning). This terminological adoption also appeared in two studies on teaching science subjects in English in gifted high schools in Vietnam without clear rationale (Linh, 2016; Nhan, 2013). Dearden (2014) identified this confusion of EMI with such terms like CLIL, ESP, EAP, and teaching English as a Foreign Language through English, highlighting that EMI is none of them, not a fixed concept either, but "one that is evolving as an increasing number of countries adopt it as a system of education" (p.7).

Given the situation above, EMI in the current paper is defined as an approach in which English-as-a-foreign language is used as a medium to teach subjects other than the English subject. According to MOET's policy, the dual objectives of embracing EMI in Vietnam are to enhance the English abilities of both teachers and students, and widen roads to further education (Linh, 2016; Nguyen & Thanh, 2012; Tran, 2011). In the short term, the EMI program aims to mitigate the language obstacles faced by gifted

high school students in Mathematics Olympics and other international competitions as well as to empower high-achieving students to win scholarship in English-speaking countries (Hong, 2010).

## 2.2. Science teachers' perception of EMI implementation

Empirical evidence has lent support to EMI education in terms of teachers' perception of its positive impacts on students' English proficiency (Alfehaid, 2018; Alhamami, 2015; Başıbek et al., 2014; Hu, Li, & Lei, 2014). In a large-scale study on the perceptions of teachers (n=100) and students (n=500) from six universities in the Arabian Gulf towards the effectiveness of EMI, Belhiah and Elhami (2015) found that the EMI policy seemed to considerably improve students' English proficiency. Similarly, in Tatzl (2011) the eight lecturers of Applied Sciences at an Austrian university believed that EMI students' linguistic skills, especially subject-specific vocabulary, confidence building and access to English learning resources were much enhanced. These benefits mostly matched those reported by Channa (2012), namely students' improved communicative competence, self-confidence and motivation to explore scientific references in English.

However, in terms of content learning, research on EMI implementation reported negative effects in many ways. Williams (2015), in his systematic review on the globally published research centering on EMI implementation in higher educational contexts, underscored the effect that students' and instructors' English abilities and the academic requirements had on the success of EMI programs. Specifically, the poor English proficiency of EMI students caused detrimental effects on their academic and mental lives (Barrios, López-Gutiérrez, & Lechuga, 2016; Başıbek et al., 2014; Dearden, 2014; Doiz et al., 2011; Tatzl, 2011). Likewise, Sultana (2014), in a mixed-method study to investigate EMI effect on the academic performance of 115 Bangladeshi first-year students, revealed students' low participation in classroom discussions and activities along with hindrances in identity recognition. In addition, research conducted by Manalastas and Batang (2018) showed that the confidence of students in the English Only Class was lower than those in the Multi Lingual Class due to language barriers in expressing themselves.

According to Belhiah and Elhami (2015), most Arabian students perceived great improvement in their linguistic proficiency; in contrast, their teachers indicated that the students failed to have the appropriate reading, writing or speaking skills for understanding course materials, answering exam questions in English, or communicating the content effectively in English. The researchers further highlighted that the students resorted to non-academic English, and had a basic communicative ability. Yip, Tsang and Cheung (2003), in particular, compared the academic achievement of EMI Chinese students and Chinese-medium students learning science, and found that the EMI students had lower achievement in science knowledge than their peers because they had difficulties in fully comprehending abstract concepts, distinguishing between scientific terms and applying scientific knowledge in new or realistic situations. In practice, research has also indicated that EMI teachers concentrate time and effort on preparing materials, explaining, repeating the information, which restricted the full content coverage (Alhamami, 2015; Barrios et al., 2016; Dearden, 2014; Doiz et al., 2011; Tatzl, 2011). Indeed, the varying and low English abilities of EMI learners present obstacles to the implementation of EMI curriculum in many contexts. To cope with this, how do science teachers deploy EMI in their practice?

## 2.3. Science teachers' practice in EMI classrooms

A number of studies have revealed that the inadequate command of English of both teachers and students in EMI classrooms restricted both instruction and learning. In various cases, the prominent linguistic strategy increasingly adopted to deal with language barriers in EMI classrooms is code-switching between L1 and English (Hu et al., 2014; Karakas, 2016; Kim, 2011; Muttaqin & Ida, 2015; Owu-Ewie & Eshun, 2015; Probyn, 2005; Simasiku, Kasanda, & Smit, 2015; Tan & Lan, 2011; Vu & Burns, 2014).

According to Simasiku, Kasanda and Smit (2015), since EMI classes resulted in limited students' interaction, the majority of Namibian teachers expressed their advocacy of code-switching. The

researchers argued that EMI induction in Namibia was inappropriate as it failed to take account of the English proficiency of teachers and students. Similarly, the fact that Korean students failed to understand the course material in EMI classes has led to an unavoidable need for using L1 (Kim, 2011). Kim (2011) further argued that preference for L1 in EMI classes depends on the amount of explanation in their course textbooks. Code-switching back to L1 is normally used to summarize the course content, to explain the difficult concepts and discuss complex processes, or to facilitate interaction with students (Hu et al., 2014; Karakas, 2016; Vu & Burn, 2014).

Selective teaching is also opted to address the issue of inadequate linguistic ability. Tan and Lan (2011) observed that the Malaysian teachers tended to focus on key terms as a means to help students overcome their linguistic barriers. This finding is partly corroborated with the study of Uys, Van der Walt, Van den Berg, and Botha (2007) in Southern Africa. In this study, the vocabulary identified by the content teachers is not much related to the learning materials or too simple for the learners. Besides, based on observation, this study also found that only a few teachers taught vocabulary, and none of them used any strategies to introduce new vocabulary.

Contrary to the shortcomings of content teachers reported above, Lehtonen and Lönnfors (2001) reported the lecturers in their study had extensive experience in EMI, and used different teaching styles relevant to students' cultural, academic and linguistic backgrounds. Moreover, interactive teaching methods, clear and simple instructions along with slow speed and intelligibility were emphasized (Lehtonen & Lönnfors, 2001).

In Vietnam, researchers have pointed out a similar picture. Vu and Burns (2014) reported the challenges in EMI implementation at a public university. Semi-structured interviews were conducted with 16 lecturers. Four main challenges in EMI implementation emerged, namely teachers' inadequacy of English competence, students' lack of English proficiency, pedagogical approach, and resource availability. Manh (2012) investigated the possible impacts of EMI at higher education institutions (HEIs) and concluded that one of the serious problems in the implementation of EMI policy in Vietnamese HEIs is the low English proficiency of lecturers and students. He added that the curricula at HEIs present obstacles to content updating and flexible implementation, alongside with a traditional and passive teaching methodology. Overall, the challenges inherent in the adoption of EMI at tertiary level in Vietnam were similarly reported in other HEIs namely Taiwan (Hou, Morse, Chiang, & Chen, 2013) and Spain (Barrios et al., 2016).

In summary, most of the studies have consistently found challenges facing EMI implementation. However, the contexts in these studies vary. It is uncertain to what extent the findings on the EMI programs at tertiary level can be extrapolated to the high school context. Consequently, this case study has been conducted to add evidence to the literature.

# 3. Methodology

## 3.1. Research design

The current study examined a special case, which is a gifted high school. Since this research focuses on the questions of "what" and "in what ways" regarding a particular educational program, the case study approach has been deployed. As defined by Gay, Mills, and Airasian (2011), case study research places a focus on "a unit of study known as a bounded system" (p.443). The cases under study consisted of two groups: the teachers who participated in teaching subject lessons, and those who observed the lessons. The comparison of these cases was supposed to produce rich data.

## 3.2. Context and participants

Before conducting interviews, a call for participation was sent to concerned science teachers at the school. Nine science teachers volunteered and were explained the purpose of the study. Anonymity was ensured

by assigning a code to each participant. Nine subject teachers included five females and four males, teaching Mathematics, Physics, Chemistry, and Biology. Six of them were under forty years old, had the Master of Science degrees and have been teaching for more than five years. Since a requirement for achieving a MS degree is the English proficiency equivalent to B1 (CEFR), it is estimated that their English competence should be equivalent to the level of B1. Five out of the six science teachers have delivered a total of eight EMI demonstration lessons. Seven lessons were conducted with the tenth and eleventh grade students while one was instructed to the twelfth grade. Students selected for EMI piloted lessons were majoring in Mathematics, Physics, Chemistry and English. The three other teacher participants acted as both subject teachers and heads of a subject division. They participated in the study as observers and managers.

### 3.3. Data collection and analysis

An in-depth interview was employed with interview questions focusing on perceived impacts of the EMI teaching strategies, and evaluation of the EMI program alongside with EMI training and policy issues. Face-to-face individual interviews were employed owing to their flexibility. Prior to the interviews, an interview guide was sent to EMI teachers. The interview guide to teacher-leaders consisted of four parts: evaluation of EMI feasibility, evaluation of piloted EMI lessons, policy issues, and evaluation towards the EMI program. The interviews were conducted in Vietnamese, and each interview lasted around forty minutes. The interview database produced a transcript of 22,450 words in total. Then the six-phase thematic analysis proposed by Braun and Clarke (2006) was used to analyse the data. The six-phase guide consisted of data familiarization, codes generation, themes searching, themes reviewing, theme defining, and report production.

## 4. Results

### 4.1. Science Teachers' Perceptions of EMI in Teaching

The high school teachers' perception was captured through four major themes: (1) EMI perceived impacts on learning, (2) EMI perceived impacts on teaching activities, (3) roles of EMI teachers, and (4) facilitating roles of L1.

#### *Perceived Impacts of EMI on Learning*

**Table 1.** Perceived Impacts of EMI on Learning

| Subthemes | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 |
|---|---|---|---|---|---|---|---|---|---|
| ***Impacts on Content Acquisition*** | | | | | | | | | |
| Lacking in-depth knowledge | x | x | x | x | x | x | x | x | x |
| ***Impacts on Students' English Proficiency*** | | | | | | | | | |
| Improving English skills in general | x | x | x | x | x | x | x | x | x |
| Improving Speaking, Listening, Reading most | x | x | x | x | 0 | 0 | 0 | x | x |

*Note: 0 means no data reported*

Science teachers' perceptions towards the impact of EMI on learning are described in terms of students' content acquisition and English proficiency. All teachers thought that students' knowledge acquisition in the long term would be negatively affected by EMI classes. Particularly, students cannot gain in-depth and systematic knowledge of the whole subject content, as stated by T5: *"If students study the subject in English only, they will just learn it at the surface level. They cannot recall the full contents and systematize them."*

Indeed, the language barrier and time limit have impeded the EMI teachers and students from achieving full comprehension of concepts or theories. The elaboration on subject content knowledge and association to other related concepts could not be carried out effectively.

> *T7: It takes more time to use EMI in teaching, meaning that time for teachers' instruction and time for students' comprehension must be extended. With existing time limits, the expansion of knowledge and links to realities are limited.*

In EMI classes, students not only process the subject knowledge, but also acquire it through a foreign language, which is possibly overloading for them. T6 commented that students would possibly not understand a lesson of high academic level even if it was taught in L1 (Vietnamese), and proposed: "*The content of that lesson should be reduced… [and] this strategy indeed works.*"

Simplification or reduction of subject content in EMI classes has been viewed as a technique to overcome the language barriers while searching for long-term measures. This results in the partial missing of content knowledge. However, it has been paid off by the strengthened English proficiency. Most of the teachers confirmed this impact, explaining that EMI students are exposed to more English, so they would enhance their English competency. T1 said: *"EMI is an appropriate approach to improve students' English ability because EMI brings students many chances to be exposed to English at school."*

Listening skills can be sharpened through watching experiment simulation videos in English, which also supports students' memorization of knowledge as reported by T8. The teachers were also clear about the crucial role that specialized terminologies play in supporting students to access relevant materials online, and improving their subject reading ability: *"EMI improves students' reading skills in terms of understanding Physics-related issues." (T9)*

Writing is the least improved skill for students in some EMI classes, as more numbers and symbols are used in science subjects: *"In Math, the writing of long sentences is not popular. More symbols are used." (T2)*

All in all, despite the negative impacts of EMI on students' content learning, the teachers confirmed its benefits in improving both students and teachers' English proficiency as well as its influence on teachers' pedagogical methods.

### *Perceived Impacts of EMI on Teaching Activities*

The impacts of EMI on teachers' instructional activities are discussed with relevance to teachers' English proficiency and their teaching methods. Regarding teachers' English proficiency, it seems all the four English skills of the teachers are strengthened, especially English for subject-related matters. T2 said, *"EMI has improved my speaking, listening and reading skills in terms of Math related issues. For the writing skill, when preparing the lesson plan, I need to write a lot, from simple to complex sentences."*

Indeed when English is used as a medium of instruction, the practice of the four language skills has come into play and is optimized in the specific academic subjects. For example, the writing skill of EMI teachers is sharpened as they need to present the lesson contents in English. Significantly, the improvement in speaking tends to outweigh. T3 reported: *"EMI has improved my speaking skill most and also my resource of specialized terminologies. It makes me more confident in using English now."*

**Table 2.** Perceived Impacts of EMI on Teaching Activities

| Subthemes | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 |
|---|---|---|---|---|---|---|---|---|---|
| ***Impacts on Teachers' English Proficiency*** | | | | | | | | | |
| Improving English for subject-related fields | x | x | x | x | x | x | x | x | x |
| ***Impacts on Teachers' Teaching Methods*** | | | | | | | | | |
| Reducing content | x | x | x | x | x | x | x | 0 | x |
| Slowing down speed of instruction | x | x | x | x | x | x | x | x | x |
| Simplifying language use in tasks | x | x | x | x | x | x | 0 | 0 | 0 |

*Note: 0 means no data reported*

The perceived enrichment in the subject-related vocabulary has given EMI teachers a sense of confidence in their English ability. Despite not mentioning clearly which skill was most improved, T7 clarified why EMI enhanced the English competence of science teachers:

> *T7: Firstly, the teachers have to study how to teach Math in English, read relevant materials, learn the foreign language, learn the subject-related terminologies, pronunciation, and grammar. They have to research a good deal of things in order to be able to teach only one EMI lesson.*

When studying how to teach a science lesson in English, EMI teachers have to prepare not only the content but the language. As English is a means to transfer the content, they are obliged to learn how to deploy it effectively by reading all related resources in English, learning the terminologies, then learning the linguistic forms including pronunciation. Whilst researching, they are learning the language as well, their English proficiency is consequently improved.

In fact, some modifications to the teaching methodology have been adopted in EMI education. Alterations such as reduced content and slower delivery of the lesson have been deployed by EMI teachers:

> *"The content delivered is reduced and slower speed rate is used, particularly for subject-related concepts as teachers need more time to explain them clearly." (T5)*

T6 further explained in detail techniques she used for EMI teaching: *"The questions and quizzes to students should be short, simple, less language use, and corresponding to students' level."* Tasks presented in simplified English appropriate to students' level are preferred in EMI classrooms. The science teachers were well aware of how to manipulate language to suit students' level and which content to teach them. Linguistic issues have impacted not only teachers' teaching methodology but also teachers' perception about their role in EMI classrooms.

## *Roles of EMI Teachers*

**Table 3.** Roles of EMI Teachers

| Subthemes | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 |
|---|---|---|---|---|---|---|---|---|---|
| Teaching subject content as primary duty | x | x | x | x | x | x | x | x | x |
| Helping students to learn specialized vocabulary | x | x | x | x | x | x | x | 0 | 0 |
| Helping students to write a quiz answer | 0 | 0 | 0 | 0 | 0 | 0 | x | 0 | 0 |

*Note: 0 means no data reported*

When being probed about their roles in EMI classes, the teachers thought their main duty is teaching the subject content and they view English as a medium of instruction, not the goal of instruction. In general, the teachers admitted their English was not sufficient to deal with students' linguistic problems and support their proficiency development. Despite this, they believed that helping students with subject-related or specialized vocabulary was what they could do indeed. One teacher reported: *"It is not my job to teach students the English language… Thing I can do is supporting the subject-related vocabulary." (T2)*

Language barriers seem to affect the EMI practitioners in the study in many ways from the selection of teaching content to a clear-cut role in the EMI classroom. One of the major practices to compensate for language hurdles is code-switching to L1.

## *Facilitating Role of L1*

**Table 4.** Facilitating Role of L1

| Subthemes | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 |
|---|---|---|---|---|---|---|---|---|---|
| Helping to elaborate on complex words, concepts, tasks | x | x | x | x | x | x | 0 | x | x |
| Improving students' knowledge retention | 0 | 0 | 0 | 0 | x | 0 | 0 | x | 0 |
| Facilitating teacher-student interaction | 0 | 0 | 0 | 0 | x | x | x | 0 | 0 |

*Note: 0 means no data reported*

Owing to the inadequate English proficiency of teachers and students, all the teachers acknowledged the necessity of L1 (Vietnamese) in EMI classes. L1 is used as a strategy for elaborating more on complex words, concepts or issues, as T5 explained: *"For explaining complex terminologies or concepts, Vietnamese will be useful and make them [abstract concepts] linger in their mind."*

While T5 believed L1 might increase the retention of knowledge, T6 flexibly permitted students to respond to her questions in L1: *"In case students cannot answer the question in English, I allow them to use Vietnamese."*

Although L1 is not favored in EMI environments, its necessity in facilitating the interaction between teachers and students is undeniable as emphasized by T7: *"Actually Vietnamese is not encouraged to use in the EMI classroom. It is used as an alternative in case both teachers and students cannot make themselves understood in English."*

At the dawn of EMI practice, while language competencies of teachers and students still pose challenges, the use of L1 has to some extent positively influenced the success of an EMI lesson. It is a tool for EMI practitioners to resort to in communicating knowledge and avoid communication break-down.

Overall, most teachers expressed positive attitudes towards EMI impacts, particularly on students' and teachers' English proficiency. The concern here is how teachers' practice in EMI classrooms has been influenced by their perceptions of EMI.

## 4.2. Science Teachers' Implementation of EMI in Science Classes

Regarding the practice of the EMI teachers in classrooms, three main themes have emerged: (1) teachers' preparation, (2) the input in EMI classes, and (3) interaction in EMI classes.

### *EMI Teachers' Preparation*

**Table 5.** EMI Teachers' Preparation

| Subthemes | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 |
|---|---|---|---|---|---|---|---|---|---|
| ***Content Delivered*** | | | | | | | | | |
| Selecting comprehensible topics | x | x | x | x | x | x | x | x | x |
| Reviewing learnt/taught knowledge | x | x | x | x | x | x | x | x | x |
| ***Instructional Materials*** | | | | | | | | | |
| Vietnamese mandatory textbooks | x | x | x | x | x | x | x | x | x |
| English-medium textbooks | x | x | x | x | x | x | x | x | x |
| Lesson plans in English available | x | x | x | x | x | x | x | x | x |
| Bilingual textbooks | x | x | 0 | 0 | 0 | x | 0 | 0 | 0 |
| Monolingual dictionaries | 0 | x | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ***Language preparation*** | | | | | | | | | |
| Learning to use specialized and academic language | x | x | x | x | x | x | x | x | x |
| Seeking language support from English teachers or friends | x | x | x | x | x | 0 | 0 | 0 | 0 |
| Focusing on speaking skill | x | 0 | x | 0 | 0 | 0 | 0 | 0 | x |
| ***Communication Approach*** | | | | | | | | | |
| Preparing prompt questions | 0 | x | 0 | 0 | 0 | 0 | x | 0 | 0 |

*Note: 0 means no data reported*

The preparation of EMI teachers summarized in Table 5 reveals four subthemes classes. The teachers tended to select simple and comprehensible content for review in English (not for teaching). To prepare EMI lessons, they used Vietnamese textbooks and English-medium textbooks or English lesson plans available online. Some teachers used bilingual textbooks. The extract below represents the teachers' practice:

> *T2: We have to prepare many things. The topic chosen for EMI teaching should be of less use of English. I mean there are fewer concepts and more rules so that when students look at the rules, they will understand and can do application tasks. For teaching materials, I use both bilingual and English-version textbooks of MOET for high school students. Besides, I select basic content from Vietnamese mainstream textbooks and vocabulary from Southern African textbooks for high school. Oxford dictionary online is also used for checking vocabulary meaning and pronunciation.*

According to T2, the topic selected for teaching in English should elicit little language use, fewer theoretical concepts and more formulas to facilitate students' content learning. Especially, linguistic accuracy was one of the concerns of EMI teachers; they used monolingual dictionaries to check lexical meaning and pronunciation. They also sought support from colleagues, friends or English teachers. Ultimately, the language used in classroom is the most concerning issue of EMI teachers: *"I work with Mr. Long [pseudo-*

*name of the English teacher] to correct my language use." (T1).* T3 reported her worry about how to improve her speaking skill with fluency and confidence.

T2 also reported that designing the leading questions to activate students' knowledge was quite time consuming and challenging: "*Preparing prompt questions was one of the hardest parts… If the prompt questions were too easy or difficult, students don't know how to answer."*

Prompt questions, properly designed in content and form, can be seen as a communicative technique for teachers to trigger students' background knowledge and link to the new knowledge.

### *The Input in EMI Classes*

**Table 6**. Input in EMI Classes

| Subthemes | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 |
|---|---|---|---|---|---|---|---|---|---|
| Practice quizzes | x | x | x | x | x | x | x | 0 | x |
| Specialized terminologies | x | x | x | x | x | 0 | 0 | x | x |
| Core theories or concepts | x | x | x | x | x | 0 | x | x | x |
| Review lessons in English | 0 | 0 | 0 | 0 | 0 | x | 0 | 0 | 0 |

*Note: 0 means no data reported*

The input provision in EMI classes as presented in Table 6 reveals activities restricted to concept teaching, related English terms, and quizzes. Re-teaching lessons that had been taught in Vietnamese can be associated with the metaphor "old wine, new vessel". T6 revealed what she taught in her piloted lessons:

> *T6: It's the review lesson on the previous knowledge, and the goal was to introduce to students subject-related vocabulary and concepts. The content is very much simpler than the one taught in Vietnamese. [W]hen students review the knowledge in English, they may not feel scared and confused.*

According to T6, this was a scaffolding strategy, meaning that lists of specialized terminologies and related concepts in English had been gradually presented to students before classes. The teacher believed that teaching in this way helps reduce students' worries and anxiety. She also emphasized that the content introduced to students was not as complex as the ones in Vietnamese.

However, to compensate for the loss of disciplinary knowledge due to language barriers, deeper knowledge was introduced to students through practice quizzes. T6 spent most of her time on preparing those quizzes: "*For each specific point in the lesson, I have to search and prepare the illustrated quizzes."*

One of the goals of science subjects at high school is that students can understand and apply rules in solving tasks. To achieve this, tasks are often designed in the same formats as those used in the English subject but the content is related to the science knowledge. T6 said, "*The formats of quizzes in Chemistry are similar to the ones of the English subject such as matching, multiple-choice questions, true or false… but the content of these quizzes refers to Chemistry."*

Similarly, T3 modified the subject-related knowledge and vocabulary specified in Vietnamese and designed handouts for students to review them before classes: *"I prepare some learning materials in which the Physics content is explained in Vietnamese and related vocabulary in English with Vietnamese meaning is provided as well. I ask students to review them in advance."*

The teacher reported without knowing the vocabulary, the students cannot catch up with the lesson. In response to that, some pre-teaching of vocabulary should be done before the actual practice.

### *Interaction in EMI Classes*

The interaction in EMI classes, as shown in Table 7, involves three dominant themes namely teachers' questions, students' responses and teachers' lectures. Speaking English was also practiced by four of the

teachers, while some of them organized discussion for students' interaction, or partly used L1 and even body language to interact with students.

**Table 7.** Interaction in EMI Classes

| Subthemes | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 |
|---|---|---|---|---|---|---|---|---|---|
| Teachers' questions to students | x | x | x | x | x | x | x | x | x |
| Students' responses to teachers' questions | x | x | x | x | x | x | x | x | x |
| Teachers' lectures of core concepts | x | x | x | x | x | x | x | x | x |
| Group discussion | 0 | 0 | x | 0 | x | 0 | 0 | x | 0 |
| Students' questions to teachers | x | x | 0 | 0 | 0 | 0 | x | x | 0 |
| Complete English use | x | x | x | 0 | 0 | x | 0 | 0 | 0 |
| Mostly English use, partly L1 use | 0 | 0 | 0 | x | x | 0 | 0 | x | x |
| Body language use | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 |

*Note: 0 means no data reported*

The above picture illustrates that there are interactions between learners with the content delivered, and between learners and teachers. Nevertheless, the table shows that not all the teachers employed interactive activities. This was because the teachers lacked confidence in their English competency: *"Most activities stick to the plan since I am not confident in my English ability and just worry that I will make a lot of mistakes if I use English too much." (T2)*

Without adequate English competence as she expected along with her fear of making mistakes, T2 dared not risk going off the track of the lesson plan. In contrast, T4 claimed that what she taught in class was not exactly the same as what she wrote in the lesson plan. The teacher's flexible pedagogical methods in EMI as quoted below shows that interaction is not limited to the use of linguistic forms. She said:

> *T4: Teaching in English does not mean that I learn the English plan by heart. During classroom interaction, for some cases I used simpler language, but for other cases I explained in academic language. Sometimes students could not thoroughly understand all my explanations, so I tried using body language and L1. I think they worked for my students.*

In addition, T8's observation of EMI classes revealed that EMI teachers' diversification of instructional techniques could maximize students' participation in class activities: *"Different teaching techniques such as pair work, group work or delivering handouts have been used."*

Such a variety of learning activities may have well accommodated various learning styles, creating safer zones for the shy to interact with their peers. T4 explained: *"Some students are too confused to speak in English. I supported them with cues, pictures or diagrams."*

Pictures and diagrams can be served as vivid illustrations to add meaning to the lesson, or as a guide to enhance students' spoken production. Despite all the challenges, according to T7, students understood the lesson taught in English as they could solve the quizzes and pose questions to teachers: *"I think students comprehend the lesson. They can do the task and be able to raise questions to the teacher. It means they are learning."*

## 5. Discussion

EMI is perceived to negatively affect students' content acquisition in that students cannot acquire in-depth knowledge as learning in their mother tongue. Due to the low English ability of both teachers and students, the teachers have to simplify or reduce the teaching content. This pedagogical technique has also been reported in the study of Solodovnikova, Zeremskaya, and Zhitkova (2016). The Russian lecturers and students think it is hard to use English for explaining core principles of technical disciplines or giving

various opinions on problems, so they simplified lectures. EMI's weighty influence on students' academic learning occurs even in contexts where students have good English proficiency; however, it is more exacerbating in countries where EMI is used with low English ability students (Galloway, 2017).

The inadequate linguistic ability of teachers and students not only impedes students' acquisition of academic knowledge but also affects teachers' teaching methodology. Indeed, in EFL contexts where EMI can be seen as alien to students (Bashir & Batool, 2017), it is more strenuous, demanding and time-consuming for teachers to deploy appropriate pedagogical techniques (Cankaya, 2017; Solodovnikova et al., 2016). The speed of covering instructional activities and the quality of disciplinary knowledge transferred become slower and less deeper, which has been already highlighted as pedagogical challenges in EMI classes (Kilickaya, 2006).

Lack of training in EMI pedagogy and limited English ability have resulted in the popular use of translated language, corroborating with findings of a monotonous classroom environment with less spontaneity, interaction and humor (Cankaya, 2017; Solodovnikova et al., 2016). Limited English proficiency also interacts with workload, incentives and the time consuming nature of EMI (Kirkgoz, 2005) in shaping the EMI teachers' perception of their single duty as content teachers only. They do, to some extent, support students' language learning but restrict it to specialized vocabulary. This finding contrasts with results from Keuk and Tith (2013) in that Cambodian lecturers failed to provide any significant linguistic supports despite the linguistic challenges faced by the students. The EMI stakeholders' emphasis on subject knowledge at the expense of language supports has been criticized by Wit (2011) as a hindrance to the quality of EMI education.

EMI teachers, while experiencing the language barriers, code-switch to L1 as a strategy to facilitate students' comprehension. According to Karakas (2016), since students fail to understand EMI lessons, which might account for little participation in class activities, L1 can be resorted to summarize the course content. Using L1 occasionally and judiciously is practical for both the teachers and students to master disciplinary knowledge (Karakas, 2016).

Above all, EMI is believed to increase the English proficiency of both teachers and students, especially reading and listening skills. This is partly true (Ibrahim, 2004) as teachers and students have more exposure to the target language (comprehensible input) and opportunities to produce it (comprehensible output) in EMI environment. Nevertheless, only a formal register of language is adopted in EMI (Ibrahim, 2004) since teachers and students use a few linguistic skills to communicate certain academic topics in classroom. Similarly, Lei and Hu (2014) found that the EMI program researched is ineffective in improving Chinese students' English proficiency. Galloway (2017) also indicated the less effectiveness of EMI on students' English proficiency compared to traditional language study, except bigger gains in students' reading and listening proficiency. Serious concerns about the expected effect of EMI on enhancing students' English proficiency have been raised (Lei & Hu, 2014) since research into the extent of this impact is still scarce (Galloway, 2017).

Teachers are under pressure to prepare for EMI teaching as it is not simply the language barrier that is challenging but the precise and appropriate presentation of disciplinary knowledge in a foreign language, searching of authentic resources and meeting expected outcomes of the lesson. Those preparations have made EMI teachers and students cognitively overloaded (Gao, 2008). Actually, finding authentic materials relevant to the current cognitive level of students is difficult because there have been scarce mainstream sources specifically designed for EMI education in the context. Therefore, collecting various resources as an immediate solution may have resulted in inconsistency between course contents (Gokmenoglu & Gelmez-Burakgazi, 2013) and more seriously across the curricula (Martinez, 2016).

As EMI is still foreign to students in the EFL context like Vietnam, teachers try to make the content learning less strenuous in that only specialized terms, key concepts and core theories are fed to students. However, it is this simplification of content that may result in students' lack of skills to apply what had

been taught or relate the content to realities. Such content only serves the purpose of examination in which much cramming occurs without any added explanation. Seriously, when exams are completed, there is a sense of relief among students and the answers to incomprehensive topics or concepts are left behind (Bashir & Batool, 2017).

There were student-student and teacher-student interactions in EMI lessons, but those interactions are limited to teacher initiation and student response. Lack of English competence has decreased students' overall confidence, hindering them from posing any questions to teachers. Students' low confidence and lack of motivation towards EMI courses have resulted in failure in EMI courses (Smith, 2004). A traditional image of the lecturer standing in front of the class and lecturing from notes like a monologue might clarify how monotonous an EMI class is (Solodovnikova et al., 2016). As indicated by Ibrahim (2004), students who experience difficulties in expressing themselves would be reluctant to ask questions and even to develop interpersonal relationship with their teachers and friends. Obviously, a good deal of time and efforts is needed for the establishment of a genuine EMI class where a high degree of interaction and motivation among teachers and learners can be found and the double acquisition of disciplinary and linguistic knowledge can be achieved.

## 6. Conclusion and Implications

Generally, the Vietnamese science teachers express positive perceptions towards the impacts of EMI on students and teachers' English proficiency. Nevertheless, the teachers think that if the sole use of English is strictly followed, students' content coverage will be defected in the long run. Teaching in a new language, teachers have to employ appropriate strategies such as giving simple language instructions, slowing down, and providing more practice quizzes. In addition, to overcome the language hurdles, the teaching of key terminologies, core concepts and theories as primary input were implemented. To conduct an EMI lesson lasting forty-five minutes, EMI teachers need to spend much time on preparing and conducting class activities. Inevitably, limited English ability affected the teachers' perception of their role as content teachers only, increased the use of translated language, decreased spontaneity and improvisation in EMI classrooms.

Since the aim of embracing EMI at high school in Vietnam is to create a workforce of good English competence (MOET, 2008, 2010), possibly resulting from a mistaken view of EMI positive impacts on graduates' upward social and economic ability (Galloway, 2017), an unclear path for EMI implementation has been followed in the context of this study. Language policies enforced suddenly and in a top-down fashion to make sweeping changes are likely to be met with negative reactions (Bashir & Batool, 2017; Martinez, 2016). Despite its limitation in self-report evidence and generalization, this study adds further evidence to conclude that the feasibility and sustainability of EMI programs in terms of qualified human resources, coherent and systematic curriculum, targeted students, physical resources, and commitment of stakeholders cannot be underestimated. In this respect, some implications for future implementation of EMI can be considered. As the low English proficiency of teachers and students has been a recurring concern in EMI (Martinez, 2016), there should be a bridging program to prepare EMI teachers before launching the EMI programs. Besides, an intensive training program on EMI pedagogical methodology is expected to support the EMI teachers in designing their instructional activities to engage students more productively instead of teacher-fronted lectures. Furthermore, a set of qualifications of EMI teachers and students, clear objectives and outcome specifications should be set up. It would be ideal to have an official curriculum specifically designed for EMI teaching. This will save teachers' time and energy for searching and designing materials and serve as a reliable resource for students to practice their learning autonomy.

Based on the research findings, some implications for English teaching practices in the classrooms have been drawn. Specifically, the lexical instruction in the EMI classes in this study was conducted in a

traditional way and detached from context. Teachers gave students handouts or lists of related words with translated meaning in L1 to see in advance. Instead, interactive vocabulary teaching should be implemented by using pictures, synonyms, antonyms, examples or situations. Moreover, crucial aspects of vocabulary learning should be well attended including conceptual meaning, sound form, spelling, grammatical category, collocation, frequency, register and word association (Nation, 1990). In addition, increased use of interactive activities such as games, quizzes, group discussions, presentations, and debates can be considered as alternatives to teacher-fronted lectures in EMI classrooms. Due to linguistic barriers of EMI practitioners, code-switching to L1, use of visual aids like pictures, diagrams, or video clips, and body language can help in meaning clarification and avoiding teacher-student communication break-down. To support students' English enhancement, detailed guidance to use online resources regarding authentic websites or printed references in English can be provided to students by EMI teachers.

## References


Alfehaid, A. (2018). Using English as a Medium of Instruction in a Saudi University: Experiences and Implications. *Asian EFL Journal, 20*(12.2), 60-107. doi:https://www.asian-efl-journal.com/

Alhamami, M. (2015). Teaching science subjects in Arabic: Arab university scientists' perspectives. *Language Learning in Higher Education, 5*(1), 105-123. https://doi.org/10.1515/cercles-2015-0006

Barrios, E., López-Gutiérrez, A., & Lechuga, C. (2016). Facing challenges in English Medium Instruction through engaging in an innovation project. *Procedia-Social and Behavioral Sciences, 228*, 209-214. https://doi.org/10.1016/j.sbspro.2016.07.031

Bashir, S., & Batool, F. (2017). English As Medium Of Instruction In Punjab: The 2009 Experiment. *Journal of Policy History*.

Başıbek, N., Dolmacı, M., Cengiz, B. C., Bür, B., Dilek, Y., & Kara, B. (2014). Lecturers' perceptions of English medium instruction at engineering departments of higher education: A study on partial English medium instruction at some state universities in Turkey. *Procedia-Social and Behavioral Sciences, 116*, 1819-1825. https://doi.org/10.1016/j.sbspro.2014.01.477

Belhiah, H., & Elhami, M. (2015). English as a medium of instruction in the Gulf: When students and teachers speak. *Language Policy, 14*(1), 3-23. https://doi.org/10.1007/s10993-014-9336-9

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Byun, K., Chu, H., Kim, M., Park, I., Kim, S., & Jung, J. (2011). English-medium teaching in Korean higher education: Policy debates and reality. *Higher Education, 62*(4), 431-449.

https://doi.org/10.1007/s10734-010-9397-4

Cankaya, P. (2017). Challenges in English Medium of Instruction from the Teachers and Students' Eyes. *Online Submission, 5*(4), 830-839. https://doi.org/10.18298/ijlet.2096

Channa, M. A. (2012). Teachers' perceptions towards English language as medium of instruction in Pakistan *Interdisciplinary Journal of Contemporary Research In Business, 4*(5), 759.

Crystal, D. (2012). *English as a global language*: Cambridge university press.

Dearden, J. (2014). English as a medium of instruction–a growing global phenomenon. *British Council. Online: http://www. britishcouncil. org/education/ihe/knowledge-centre/english-language-higher-education/report-english-medium-instruction (accessed 2/2/2016)*.

Doiz, A., Lasagabaster, D., & Sierra, J. M. (2011). Internationalisation, multilingualism and English-medium instruction. *World Englishes, 30*(3), 345-359. https://doi.org/10.1111/j.1467-971X.2011.01718.x

Galloway. (2017). How effective is English as a medium of instruction (EMI)? doi:https://www.britishcouncil.org/voices-magazine/how-effective-english-medium-instruction-emi

Gao, X. (2008). Shifting motivational discourses among mainland Chinese students in an English medium tertiary institution in Hong Kong: A longitudinal inquiry. *Studies in Higher Education, 33*(5), 599-614. https://doi.org/10.1080/03075070802373107

Gay, L. R., Mills, G. E., & Airasian, P. W. (2011). *Educational research: Competencies for analysis and applications*: Pearson Higher Ed.

Gokmenoglu, T., & Gelmez-Burakgazi, S. (2013). Designing English-Medium Classroom Management Course for Non-Natives. *Turkish Online Journal of Qualitative Inquiry, 4*(3), 17-33.

Hamid, M. O., Nguyen, H. T. M., & Baldauf Jr, R. B. (2013). Medium of instruction in Asia: Context, processes and outcomes. *Current Issues in Language Planning, 14*(1), 1-15. https://doi.org/10.1080/14664208.2014.867574

Hong, H. (2010). De an 2300 ti dong phat trien truong chuyen: Dau tu chua cong bang [Spending 2,300 billion vnd on developing gifted schools: an unfair investment. Retrieved from https://dantri.com.vn/giao-duc-khuyen-hoc/de-an-2300-ty-dong-phat-trien-truong-chuyen-dau-tu-chua-cong-bang-1290874584.htm

Hou, A. Y. C., Morse, R., Chiang, C.-L., & Chen, H.-J. (2013). Challenges to quality of English medium instruction degree programs in Taiwanese universities and the role of local accreditors: A perspective of non-English-speaking Asian country. *Asia Pacific Education Review, 14*(3), 359-370. https://doi.org/10.1007/s12564-013-9267-8

Hu, G., Li, L., & Lei, J. (2014). English-medium instruction at a Chinese University: Rhetoric and reality. *Language Policy, 13*(1), 21-40. https://doi.org/10.1007/s10993-013-9298-3

Hudson, P. (2009). Learning to teach science using English as the medium of instruction. *EURASIA, 5*(2), 165-170. https://doi.org/10.12973/ejmste/75268

Ibrahim, J. (2004). The implementation of EMI (English medium instruction) in Indonesian universities: Its opportunities, its threats, its problems, and its possible solutions. *k@ ta lama, 3*(2), 121-138.

Karakas, A. (2016). Turkish lecturers' views on the place of mother tongue in the teaching of content courses through English medium. *Asian Englishes, 18*(3), 242-257. https://doi.org/10.1080/13488678.2016.1229831

Kennedy, C. (2011). Challenges for language policy, language and development. *Dreams and realities: Developing countries and the English language*, 2-15.

Keuk, C. N., & Tith, M. (2013). The Enactment Of English-Medium Instruction (Emi) Undergraduate Program In Cambodia: Students' voices. *International Journal of Innovation in English Language Teaching and Research, 2*(2), 159.

Kilickaya, F. (2006). Instructors' Attitudes towards English-Medium Instruction in Turkey. *Online Submission, 8*(6).

Kim, K.-R. (2011). Korean professor and student perceptions of the efficacy of English-medium instruction. *Linguistic Research, 28*(3), 711-741. https://doi.org/10.17250/khisli.28.3.201112.013

Kirkgoz, Y. (2005). English language teaching in Turkey: Challenges for the 21st century. *Teaching English to the world: History, curriculum, and practice*, 159-175.

Kirkpatrick, A. (2011). English as a medium of instruction in Asian education (from primary to tertiary): Implications for local languages and local scholarship. *Applied Linguistics Review, 2*(1), 99-118. https://doi.org/10.1515/9783110239331.99

Lehtonen, T., & Lönnfors, P. (2001). *Teaching through English: A blessing or a damnation.* Paper presented at the Conference papers in the new millennium.

Lei, J., & Hu, G. (2014). Is English-medium instruction effective in improving Chinese undergraduate students' English competence? *International Review of Applied Linguistics in Language Teaching, 52*(2), 99-126. https://doi.org/10.1515/iral-2014-0005

Linh, N. T. T. (2016). Reconsidering the first steps of CLIL implementation in Vietnam. *European Journal of Language Policy, 8*(1), 29-56. https://doi.org/10.3828/ejlp.2016.4

Madhavan, D., & McDonald, J. (2014). Webinar: English as medium of instruction (EMI): Philosophies and policies. *Retrieved fro m http://www. oecd. org/edu/imhe/foodforthoughtenglishasamediumofinstructionwebinar. pdf*.

Manalastas, A. K. E. M.-., & Batang, B. L. (2018). Medium of Instruction on Student Achievement and Confidence in English. *TESOL International Journal, 13*(3), 88-99. doi:https://www.tesol-international-journal.com/volume-13-issue-3-2018/

Manh, L. D. (2012). English as a medium of instruction in Asian universities: The case of Vietnam. *Language Education in Asia, 3*(2), 263-267. https://doi.org/10.5746/LEiA/12/V3/I2/A14/Manh

Martinez, R. (2016). English as a Medium of Instruction (EMI) in Brazilian higher education: Challenges and opportunities. *English in Brazil: Views, policies and programs*, 191-228.

MOET. (2008). Decision No. 1400/QĐ-TTg "Teaching and Learning Foreign Languages in the National Education System, Period 2008 to 2020". Retrieved from http://vanban.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=1&_page=2&mode=detail&document_id=78437

MOET. (2010). Decision No. 959/QĐ-TTg "Developing the Gifted Upper-Secondary School System, Period 2010 to 2020". Retrieved from http://vanban.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=1&mode=detail&document_id=95359

Muttaqin, S., & Ida, I. (2015). Using English As A Means Of Instruction (Emi) In Teaching Content Subjects. *Nobel Journal, 6*(1), 69-85. https://doi.org/10.15642/NOBEL.2015.6.1.47-60

Nation, I. S. (1990). *Teaching and learning vocabulary*. New York: : Newbury House.

Nguyen, T., & Thanh, B. (2012). Co nen day cac mon khoa hoc bang tieng Anh? [Should natural science subject be taught in English?]. Retrieved from https://thanhnien.vn/giao-duc/co-nen-day-cac-mon-khoa-hoc-bang-tieng-anh-51843.html

Nhan, T. (2013). Promoting content and language integrated learning in gifted high schools in Vietnam: Challenges and impacts. *Internet Journal of Language, Culture and Society, 38*, 146-153.

Owu-Ewie, C., & Eshun, E. S. (2015). The Use of English as Medium of Instruction at the Upper Basic Level (Primary Four to Junior High School) in Ghana: From Theory to Practice. *Journal of Education and Practice, 6*(3), 72-82. https://doi.org/10.4314/gjl.v3i2.3

Probyn, M. (2005). *Learning science through two languages in South Africa.* Paper presented at the International Symposium on Bilingualism.

Shohamy, E. (2012). 10 A Critical Perspective on the Use of English as a Medium of Instruction at Universities. *English-medium instruction at universities: Global challenges*, 196. https://doi.org/10.21832/9781847698162-014

Simasiku, L., Kasanda, C., & Smit, T. (2015). Teaching subjects matter through English as the medium of instruction in the Namibian English second language classrooms *European Scientific Journal, ESJ, 11*(3).

Smith, K. (2004). *Studying in an additional language: What is gained, what is lost and what is assessed.* Paper presented at the Integrating content and language: Meeting the challenge of a multilingual higher education.

Solodovnikova, O., Zeremskaya, Y., & Zhitkova, E. (2016). Implementation of EMI (English as medium of instruction) in Tomsk Polytechnic University. *INTED2016*, 5034-5040. https://doi.org/10.21125/inted.2016.2277

Sultana, S. (2014). English as a medium of instruction in Bangladesh's higher education: Empowering or disadvantaging students? *Asian EFL Journal, 16*(1), 11-52. doi:https://www.asian-efl-journal.com/

Tan, M., & Lan, O. S. (2011). Teaching mathematics and science in English in Malaysian classrooms: The impact of teacher beliefs on classroom practices and student learning. *Journal of English for Academic Purposes, 10*(1), 5-18. https://doi.org/10.1016/j.jeap.2010.11.001

Tatzl, D. (2011). English-medium masters' programmes at an Austrian university of applied sciences: Attitudes, experiences and challenges. *Journal of English for Academic purposes, 10*(4), 252-270. https://doi.org/10.1016/j.jeap.2011.08.003

Tran, T. (2011). Hien ke day Toan, Tin bang Tieng Anh hieu qua [Suggestions for Teaching Mathematics and Information Technology in English]. Retrieved from http://flss.vnu.edu.vn/tin-tuc/hien-ke-day-toan-tin-bang-tieng-anh-hieu-qua

Uys, M., Van der Walt, J., Van den Berg, R., & Botha, S. (2007). English medium of instruction: A situation analysis. *South African Journal of Education, 27*(1), 69-82.

Vu, N. T., & Burns, A. (2014). English as a medium of instruction: Challenges for Vietnamese tertiary lecturers. *The journal of Asia TEFL, 11*(3), 1-31.

Williams, D. G. (2015). A Systematic Review of English Medium Instruction (EMI) and Implications for the South Korean Higher Education Context.

Wit, H. d. (2011). International of higher education: Nine misconceptions. *International Higher Education, 64*, 6-7.

Yip, D. Y., Tsang, W. K., & Cheung, S. P. (2003). Evaluation of the effects of medium of instruction on the science learning of Hong Kong secondary students: Performance on the science achievement test. *Bilingual Research Journal, 27*(2), 295-331. https://doi.org/10.1080/15235882.2003.10162808