LEVERAGING SCIENTIFIC ENGLISH FOR EMI TO ICL TRANSITION: THE CASE OF ECONOMIC SCIENCES IN HIGHER EDUCATION SETTINGS

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Abstract: *There is a widespread consensus that EMI is successful to the extent that content-oriented communication takes place in the classroom. The good EMI teacher succeeds in keeping necessary preparatory discourse aspects as short and effective as possible. However, a functional methodology must in fact ensure that every content item learned can be used for learning something additional to the English language in the shortest available time. The present contribution attempts to put some insights into the nature of education that occurs in an EMI tertiary context in terms of the content provided, the type of discourse used and the possible combination to create an ICL environment. The research case study concerned some teachers of Economic Sciences at Biskra University, Algeria who are simultaneously Master students in English Studies. The researcher has adopted a qualitative research methodology and, in consequence, the research tools that have been utilized were respectively a teachers' questionnaire and classroom observation. The preliminary outcomes indicate that a careful balance between a content-language EMI, along with a high level mastery of Scientific English, resulted with a multifaceted and significant success of the integration of ICL in Algerian tertiary education. The researcher is conscious that the analysis has scrutinized an exceptional or rare situation which represents in itself a limiting factor, nevertheless, the investigation displays multiple and promising perspectives for future research projects.*

Keywords: *EMI; ICL; Scientific English; Higher Education; Economics*

1. Introduction

As the world becomes more closely connected, English has become the go-to-language in relationship to multiple domains and activities, especially in higher education. Indeed, universities around the world, particularly those which belong to what is referred to as developing countries, aspire to reach higher international ranking through the constant encouragement of scientific research, reputable publications, and universal cooperation. In consequence, education policy-makers throughout the globe have initiated a reform which is based upon an axiomatic and universal reality that the English language constitutes a world-wide vehicle and *a lingua franca* for the development and vulgarization of science and technology.

Within this context, the English as Medium of Instruction (EMI) approach at university level is thought to offer suitable and visible opportunities of innovative methodologies and practices. EMI is generally defined by numerous scholars as a multifaceted educational approach that advocates the use of English in the

teaching/learning operation despite English not being the students' first language. However, EMI within higher education necessitates clear instructional objectives, strong support systems for both teachers and students, and careful consideration of the particular needs of multilingual learners.

The application of EMI in some countries- comprising Algeria- is relatively recent, nevertheless, the premises of numerous and various benefits have already emerged. Indeed, one can witness the positive changes, especially in science higher education that the Algerian university is making in order to bring its programmes to the practitioner's desktop. There is nothing like the feedback of a teacher presented in person once given the opportunity for comparing experiences, peer interactions, and immediate access to experts in EMI teaching curricula and practices.

On the other hand, a number of specialists in Algeria have already taken meaningful steps toward the implementation of Integrated Content and Language (ICL) approaches in higher education. This developing impulse is not merely theoretical- it is evidenced by concrete initiatives that are shaping the educational landscape. At the junction of these two processes, Scientific English represents a synergistic factor in the transition of EMI toward ICL. This important function can be assumed by Scientific English due to the omnipotence and the indispensability of this kind of discourse.

In sum, EMI and Scientific English constitute a harmonious combination of elements that would probably lead to the successful implementation of ICL in Algerian higher education.

2. Literary Review

2.1 The Concept of EMI

The EMI approach within instructional settings, especially in higher education, is rapidly gaining popularity around the world, in particular countries that wish to internationalize their educational systems and promote global employability for their students. However, the implementation of EMI is coined with a number of requirements, principally delivering course content, conducting workshops, facilitating discussions and assessing students' work entirely or partially in English. Moreover, a successful procedure should necessarily assign and seek to realize clear instructional objectives, most importantly, the provision of students with competitive advantages in the professional world, through enhanced language proficiency (Hamid et al., 2013)

Nevertheless, the achievement of these principal objectives should equally incorporate some other broad factors, yet quite significant, namely the activation of strong support systems for both teachers and students along with the careful consideration of the unique needs of multilingual learners like in the case of Algeria (Earls, 2016). In fact, one can notice that in the situation of EMI, the latter is usually established at an institutional level that affects entire programmes and departments which take into consideration the sociolinguistic context of multilingual and multicultural countries.

2.2 The Role of EMI as a Content/Language Vehicle of Instruction

The dual function of EMI in instructional situations implies the transmission of

knowledge (content) in relationship to the particular students' specialisms through a kind of discourse (language) that pedagogically and structurally satisfies the characteristics of Scientific English. A constructive and successful attempt to fulfil this duality necessitates the realization of important elements in connection with the major factors that should be considered, the goals that should be formulated, the requirements that should be satisfied, and the types of EMI programmes that should be elaborated.

As far as the major goals that should be considered are concerned, it is essential to analyse the underlying intention/competence of the teacher. These elements are influenced by some prerequisites such as, proficiency in English, experience, motivation, attitude and other psycho-pedagogical factors. The second element is the nature of the course and the forms that it can take such as, theoretical or workshop, written or oral approach, classroom activities, etc. The third necessary element is the assignment of the objectives of the course (lecture/workshop) and the materialistic, administrative, and pedagogical requirements that would probably contribute in the success of the course (Sahki, 2025).

Concerning the goals that should be formulated, it is important in the first place to pay special attention to the formal aspects of the language (as a medium). The structural patterns, namely, phonological, morph-syntactic and semantic should be carefully analysed and, eventually, adapted to the nature of the course. The question of the content should be studied and elaborated by the EMI instructor, s/he should ensure the provision of the high quality of the knowledge provided (message). Besides, the oral presentation of the lesson should be delivered in a clear diction, the teacher's locution should allow the learner to see through the language the world of things, persons and ideas (medium). Lastly, the EMI course should create a context in which the student would be able to experience concepts, thoughts and procedures not the actual words or structures (message).

The satisfaction of the requirements represents a complex procedure that incorporates some essential parameters which give importance primarily to the experience and strengths of individual teachers. The highly proficient EMI teacher adopts the teaching methods that involve a large range of media, modern technology (Artificial Intelligence), and sophisticated means of instruction. In addition, the ESP or possibly EMI teacher should take into account other factors which are equally significant and closely related to the learner in particular. For example, the use of English along with the students' native language at least during the primary levels in case of extremely complex notions. Moreover, it is necessary to use methods that encourage a high proportion of students' involvement in classroom interaction. On the whole, the ESP/EMI teacher should make use of authentic, motivating and informative (medium and message) teaching materials.

The question of the types of EMI programmes that should be administered is open to debate, especially at the initial phases of EMI implementation. Hence, two major and distinct positions emerge: the first level of application of Partial EMI which refers to situations where English is used for some, but not all, aspects of education. This might involve lectures being delivered in English while supplementary materials or discussions are piloted in the students' native language. In fact, Partial EMI constitutes a more flexible approach that can accommodate varying levels of English proficiency. The second level of application is Full EMI which implies an educational environment where English is used

exclusively for all instructional purposes. It entails that lectures, discussions, assignments and assessments are all conducted solely in English, creating an immersive language experience.

2.3 Scope and Purpose of EMI and Scientific English at University Level

The purpose of Scientific English is to teach students of scientific subjects (including medicine, engineering, agriculture, economics, etc.) the basic language of scientific English. This basic discourse is made up of sentence patterns, structural/functional words and non-structural vocabulary which are common to all scientific disciplines and form the essential framework upon which the special vocabulary of each discipline is superimposed. Once this basic language has been mastered, the acquisition of these special vocabularies presents very little difficulty, since they are mainly international words and therefore very similar to those already used in the students' own language.

On the other hand, the Nature of the Pedagogical Material is a process which requires that the material incorporated in the course should be selected for the most part on a frequency basis, from the scrutiny of modern scientific English. The samples covered should represent the types of literature likely to be consulted by students or graduates of science- university textbooks, professional papers and articles, scientific dictionaries and semi-popularizations. Whilst the principal criteria for the inclusion of items are frequency and range, a certain amount of material would be selected for other reasons, e.g. because of their usefulness as describers and definers. This category of components are usually members of a group or set and their presence in scientific English is essential or non-substitutable though not unduly frequent.

In addition, classroom interaction in scientific English is generally characterized by the Oral Approach. Teacher's talk and students' feedback are essentially oral in view of the fact that oral discourse in context is an effective way of fixing material, even for purely recognition purposes. Furthermore, much work can be accomplished orally than in written form over a period of time and, it is easily observable that oral work adds variety and interest to the lessons.

2.4 Complementarity of EMI and Scientific English

EMI and scientific English are naturally intertwined yet, there are certain elements and features which are open to discussion, therefore, in an attempt to enrich the debate, one can proceed with a comparative analysis through the answers of the questions below:

A. Is EMI scientific English?

EMI refers to the use of English to teach academic subjects in countries where English is not the native language. While EMI is sometimes implemented in scientific and technical disciplines, it does not necessarily equate to Scientific English. Scientific English is a specialized genre with precise lexical, syntactic, and rhetorical features used in scientific discourse (Ferguson, 2007). Scientific English, as a sub-genre of ESP, follows strict conventions such as objectivity, nominalization, and passive voice (Swales, 1990). EMI, by contrast is a broader instructional approach that may or may not focus on these specific features. For example, EMI in history or philosophy uses academic English but not scientific English in the strict sense (Kuteeva, 2020).

In STEM-based EMI settings, however, the distinction becomes blurred. Teachers and students often rely on the conventions of scientific English due to the technical nature of the content. This has led some scholars to argue that EMI in scientific fields inevitably incorporates features of scientific English, even when unintentionally (Gimenez & Shaw,2021; Airey, 2016). Yet, others caution that assuming EMI always entails scientific English, ignores disciplinary variation and oversimplifies the linguistic challenges learners face. A single EMI course may contain elements of spoken, written, and visual scientific communication, each with different expectation (Airey, 2011; Lillis & Cury, 2010).

B. Is an EMI teacher tacitly a teacher of Scientific English?

Despite not being trained in language pedagogy, EMI instructors in scientific fields often model Scientific English in their lectures, slides, and written materials. They may use discipline-specific terminology, academic helping, or schematic structures that students implicitly absorb (Ball & Lindsay, 2013). This unacknowledged language role places EMI instructors at the intersection of content and language teaching, even if they do not recognize or accept it. Studies in European universities show that EMI teachers frequently assist students with vocabulary and explanation of key scientific terms, even while claiming "I'm not a language teacher" (Doiz et al, 2013; Klaassen & de Graaff, 2001).

The notion of "tacit language instruction" has emerged in EMI literature to describe how instructors engage with academic English- especially in sciences- without formal language teaching. According to Airey (2011), these instructors often scaffold content in ways that build students' discipline-specific literacy, even unintentionally. However, some researchers advocate for explicit integration of language-sensitive pedagogy in EMI training so that content teachers can better support students' development of scientific English. This does not mean turning instructors into full EAP specialists, but rather equipping them with discourse awareness (Dafouz & Smit, 2016; Shaw, 2013).

C. Can a Discourse Analyst help the EMI instructor? How, if any?

The discourse analysts play a crucial role in supporting EMI implementation, particularly by making disciplinary language practices visible. Their expertise helps identify genre structures, rhetorical strategies, and lexical patterns typical of scientific texts and lectures (Hyland, 2012; Flowerdew, 2013). They can assist EMI instructors in recognizing how knowledge is constructed through language, which is essential in scientific communication. For example, discourse analysts might help reveal how hypothesis framing or data interpretation is linguistically realized in a physics lecture versus a biology paper (Hyland & Tse, 2007).

One key contribution is the development of corpus-informed teaching materials that reflect authentic scientific discourse. These resources support EMI instructors in highlighting specific linguistic features such as causality markers, voice (passive/active) and stance (Shaw & Pecorari, 2018). Furthermore, discourse analysts contribute to EMI teacher professional development, helping instructors understand how to scaffold content linguistically and respond to student difficulties with comprehension or expression (Dafouz & Camacho-Minano, 2016). Their collaboration is especially vital in contexts like Algeria, where EMI intersects with local linguistic ecologies and may face resistance due to linguistic insecurity.

To sum up, additionally to the purely instructional aims, a scientific English course should be designed to stimulate critical thought and foster the skills of clear exposition and the impartial examination of evidence. At the same time, attempts should be made to encourage students to take an active interest in their own discipline and its relationship with other sciences and with society as well. Thus, the course should serve a broadly educational purpose as well as its specific linguistic one.

2.5 From EMI to ICL: A Synergetic Transition

2.5.1 Definition of ICL

Integrated Content and Language (ICL) in higher education refers to an educational approach that simultaneously fosters content mastery and language development. In ICL contexts, both the disciplinary knowledge and the target language (typically English) are taught in a mutually reinforcing, without relegating either to a secondary status (Cenoz, Genesee, & Gorter, 2014). Unlike traditional language support or content heavy instruction, ICL aims to develop students' academic language proficiency while deepening their understanding of complex subject matter.

2.5.2 Origins and Theoretical Underpinnings

ICL emerged from pedagogical innovations such as Content and Language Integrated Learning (CLIL) in Europe. Sheltered instruction in North America, and English as an Additional Language (EAL) practices in multilingual education systems. While CLIL was primarily introduced in primary and secondary education in the 1990s (Coyle, Hood, & Marsh, 2010), its principles gradually influenced tertiary-level practices. The need to internationalize higher education, enhance employability, and develop students' academic literacies prompted universities- especially in non-English-speaking contexts- to adopt ICL as a means to deliver subject content in a foreign language while supporting students' language development (Wilkinson & Walsh, 2015).

ICL draws from sociocultural theory (Vygotsky, 1978), cognitive academic language proficiency frameworks (Cummins, 2000), and genre-based pedagogy (Martin, 2009), emphasizing that language and content are co-constructed in academic discourse communities.

2.5.3 Main Principles of ICL

The key principles of ICL in higher education include the following:

Dual Focus: Both content mastery and language development are equally prioritized (Ball, Kelly, & Clegg, 2015).

Scaffolding: Instructional support is systematically provided to help students access both linguistic and cognitive demands (Coyle et al., 2010).

Contextualized Language Learning: Language is taught in the context of discipline-specific discourse and genres (Morton, 2020).

Collaborative Pedagogy: ICL often encourages interdisciplinary collaboration between language experts and subject-matter instructors (Airey, 2012).

Assessment Alignment: Both content knowledge and language performance are considered in assessment strategies (Costa & Pladevall-Ballester, 2019).

2.5.4 How ICL Differs from EMI?

While EMI simply refers to the use of English to teach academic subjects without explicitly focusing on language learning (Macaro, 2018), ICL is more pedagogically deliberate in addressing language needs. EMI often assumes students already have adequate English proficiency, whereas ICL acknowledges language learning as an integral part of the educational process (Pecorari & Malmstrom, 2018). The following table displays a simple comparison in terms of the different aspects of EMI and ICL:

Table 1. Comparison of Key Instructional Aspects in EMI and ICL Approaches

Aspect	EMI	ICL
Language Support	Often Minimal or Absent	Systematically Embedded
Instructor Role	Subject Expert	Subject and Language- Aware
Student Focus	Content Mastery	Content and Academic Language Development
Collaboration	Rare	Encouraged between Language/Content Instructors

2.5.5 From EMI to ICL: Ensuring a Smooth Transition

To move from EMI to ICL in higher education settings- particularly in multilingual and EFL contexts such as Algeria- a number of strategic actions are essential:

Professional Development: Teachers need targeted training on ICL methodologies, including how to scaffold language within disciplinary teaching (Llinares & Morton, 2017).

Collaborative Teaching Models: Institutional support for team-teaching between language and subject instructors can bridge knowledge gaps.

Curriculum Redesign: Syllabi should include explicit language objectives aligned with content goals (Ball et al., 2015).

Resource Development: Developing ICL-sensitive materials such as glossaries, guided reading tasks, and genre-specific writing support is key.

Policy Alignment: Institutional and national language-in-education policies should legitimize the integration of language goals in higher education curricula (Dafouz & Smit, 2020).

Such a transition must also consider local realities, including teachers' English proficiency, students' language exposure, and the broader socio-political acceptance of English in academic spaces (Ouarniki, 2023).

2.5.6 Challenges of ICL Implementation

The implementation of ICL in higher education contexts faces a number of challenges that could hinder the successful establishment of ICL within tertiary level. These difficulties can be manifold such as the problems of learning subject content through a non-native language, the need for specialized teacher training, and potential limitations in grammar instruction. Additionally, ICL can lead to cognitive overload for students, requiring careful assessment and support. It is agreed that a thorough analysis should take into consideration all the aspects of the issue, however, in view of the local situation, the focus has been put on only three major problems as follows:

A. Teachers' Challenges

It is primordial that the effective implementation of ICL requires teachers to have specialized pedagogical skills and knowledge in both content and language. In consequence, numerous pre-service and in-service training programmes have been launched in the past two years throughout the majority of Algerian universities. A particular emphasis has been put on the case of subject teachers who may not have sufficient language proficiency or, contrarily, language teachers who lack adequate content language for ICL. One should recognize and value the high degree of responsibility and motivation of the majority of teachers (content or language) despite the increase in workload. Indeed, ICL can significantly augment teachers' workload due to the need for lesson planning, material adaptation, and assessment development.

B. Students' Challenges

ICL implementation can equally create a number of difficulties that would eventually face the students in different specialisms. In fact, some students may be handicapped by some learning difficulties because they would struggle with the increased cognitive demands of ICL, that may potentially cause students' exhaustion and demotivation. Moreover, there are many discrepancies in students' mastery of the English language. Such an issue may be the cause of possible inequality between one student and another. It is reasonable to presuppose that students with lower language proficiency may be at a disadvantage in ICL settings, which may, in turn, be a significant reason for widening the achievement gap.

Besides, students may display completely different learning styles and have dissimilar sociocultural attitudes and psychological apprehensions toward the English language. Indeed, ICL may not be suitable for all learning styles and some learners would eventually be more comfortable in traditional language instruction. Sociocultural attitudes and foreign language awareness along with students' psychological and emotional factors impact the learning of a large number, if not all, of students (Eder, 2024).

C. Interdisciplinary Curriculum Challenges

Our students today are going to be tomorrows' scientists, researchers and technologists. In fact, without an understanding of systems, computers and the ability to relate multiple systems, the technician of tomorrow will be lost. As our technical world becomes even more complex, these engineers, technicians and doctors of the future will require interdisciplinary capabilities that will allow them to analyse, interpret and apply information to vastly different domains. Therefore, today's and even more in the near future, the university educational system must address the need for interdisciplinary skills by challenging the students and teaching critical thinking and problem-solving skills in the curriculum structure at present time. To the experts' estimation, it is evident that the vehicle which can efficiently contribute in the realization of such endeavour is the English language, and the nature of ICL curriculum should be interdisciplinary.

In consequence, an ICL interdisciplinary curriculum necessitates the collaborative efforts and agreements of diverse participants. Within this context, the following general principles can be shared in the hope to conceptualize ICL instruction as follows:

- Developing the scientific and technological literacy and capability of those who experience it.
- Consistence of a spectrum of programmes that address the preceding goals from general education ones up to specific specialisms ones.
- Spanning the range of content and language instruction in the same curriculum.
- The correlation of subject content represents the backbone of interdisciplinary curriculum. The latter is viewed, in general, by most educators in literature, as the organization and the transfer of knowledge on a unified continuum from general to specific. Listed here are just a few reasons why such a plan should be implemented:

(i) Teaches students how to transfer knowledge.
(ii) Involves the community as a learning environment.
(iii) Teaches students how to analyse, explain, and apply knowledge.
(iv) It is competency-based.
(v) Students are taught how to make decisions.
(vi) Students learn how to work cooperatively with others.
(vii) It improves knowledge retention (Ouarniki & Alhasani, 2025).

Besides, the pedagogical framework of ESP course content whatever the discipline (Economic Sciences, Agricultural Sciences, etc.) which is necessary can be briefly displayed as follows:

(a) Survey and Basic Definitions: the problems of terminology which concern its relation to substantive issues in ESP course design. Furthermore, the adoption of an international overview that constitutes major emphases in ESP course design.

(b) Stages of Planning in ESP Course Design: an examination of the various criteria which need to be taken into account, and models of arranging and sequencing these factors. In addition, an analysis and evaluation of needs which can take the form of a survey of major approaches to needs analysis.

(c) Approaches to the Design of ESP Materials: there is a wide and varied range of approaches which is available such as, the functional-notional approach, the topic-based approach, the skill-based approach, and the science-activity approach. Nevertheless, the selection of one approach instead of the other definitely depends on learners' needs.

(d) Evaluation of ESP Materials: the parameters for the design of materials are based upon the approaches cited above, and any material which participants bring or suggest. Moreover, there are other key factors namely, the overall organisational principles, linguistic basis, exercise design and the intended ' audience', that should be taken into consideration.

(e) Skills in an ESP Context: the necessity of re-defining skills boundaries in an ESP context, and the analysis of macro and micro skills.

(f) Testing and Evaluation in ESP Contexts: the place of testing in ESP, testing integrative skills, and the relationship between ESP teaching programmes and evaluation.

In sum, one may advance that the elaboration of an ESP course design for any scientific discipline depends on the scrupulous application of such framework along with the collaborative efforts and agreement of the different intervening professionals concerned with the operation.

D. Assessment Challenges

The major problem which might face the content and/or language instructor in the assessment of students within ICL contexts is the criteria that should be taken into account in students' evaluation. The development of appropriate assessment methods, in the elaboration of valid and effective tests and tasks that accurately measure both content knowledge and language proficiency, can be challenging. The problem, to put it simply, concerns the aspects and proportions (depending on the evaluation objectives) that should be assigned to the content or language components of the tests. Any deficiency or imbalance in the creation of tests can dramatically affect students' pedagogical accomplishments.

3. Methodology

3.1 Research Design

A descriptive research methodology has been adopted with the application of a qualitative analysis that is necessary for the interpretation of the data provided by the research tools.

3.2 Research Instruments and Data Collection

A survey questionnaire has been submitted to a sample study of six (6) university teachers at the Department of Economic Sciences at Mohamed Kheider University of Biskra, Algeria. Additionally, three (3) sessions of classroom observation have been organized with a class of 28 students (B.A. 2nd Year) of Economic Sciences at the same department. As far as the choice of teachers is concerned, the general profile was in line with the requirements of the research work, we opted for teachers who have high qualifications in the English language along with their original specialism. The following simple table displays the principal academic backgrounds of each teacher:

Table 2. Profile of Participating University Teachers Based on Qualifications, Experience, and Attitudes

Number	Qualifications (English Studies)	Experience (Number of years)	Attitudes (Positive, Negative, Neutral)
1	B.A.	4	Positive
2	B.A.	3	Neutral
3	B.A.	4	Positive
4	M.A. (1st Year)	6	Positive
5	M.A. (1st Year)	6	Positive
6	M.A. (2nd Year)	8	Positive

3.3 Results and Discussion

The organization and presentation, due to space constraints in view of the nature of publication of an article, have been arranged in such a manner that the interpretation and discussion of the questionnaire and some spontaneous discussions with some teachers have been put forward simultaneously and, the classroom observation sessions have been scrutinized in the second place.

3.3.1 Teachers' Questionnaire

1. The current application of EMI at Mohamed Kheider University of Biskra, Algeria varies from 10 to 20 percent which represents an acceptable pace of progression in view of the time devoted to the institution of EMI in Algeria by policy-makers.
2. The presentation of the fundamental advantages of EMI by teachers:
    - Prepares students for international collaboration and further studies abroad.
    - Enhances students' familiarity with scientific terminology which is predominant in English.
    - Improves access to up-to-date research and resources published in English.
3. The principal drawbacks that are pointed out by teachers:
    - Some students struggle with comprehension, especially those with weak English background.
    - Reduces classroom participation due to language barriers.
    - May negatively affect students' thorough understanding of complex subjects.
4. Besides, teachers have suggested some practical solutions to the existing difficulties:
    - Organization of regular training workshops for content teachers to improve their academic English communication skills.
    - Provide bilingual (Arabic and English) course materials at primary levels (first year students) to bridge comprehension gaps.
    - Encourage gradual integration of EMI, starting with scientific terms and summaries before full lectures.
    - Create a supportive environment for students, including intensive language centers and peer tutoring.

3.3.2 Classroom Observation

The most important elements that have been observed can be briefly summarized in the following:

A. Teachers' Attitudes

- Positive and Motivated: Many content teachers view EMI/ICL positively as it enables access to international research and allows them to develop their academic English. They think that EMI/ICL increases the quality and relevance of instruction in their scientific domains.
- Negative and Discouraged: Some teachers feel discouraged due to their limited English proficiency, which affects their ability to explain ideas clearly. They also worry about their students' comprehension and engagement.
- Neutral and Indifferent: A small portion of faculty members remains indifferent, applying EMI only when absolutely necessary such as when referencing scientific papers or collaborating with international institutions.

B. Students' Feedback

- Positive: Many students appreciate the exposure to English, as it improves their academic vocabulary and prepares them for international post-graduation studies and job opportunities.

- Negative: Some students report difficulty in understanding lectures and express stress during exams conducted in English, especially when their proficiency in this language is limited.
- Neutral: Some students remain neutral toward EMI, focusing more on course content than the language of instruction. They simply adapt to the course requirements.

3.4 Synoptic Analysis of the Case Study

A. Teachers

As far as content Teachers' Language Proficiency is concerned, this is an aim which goes beyond the usual goal of a measured level of proficiency in pronunciation, structure and vocabulary. There are other fundamental issues that should be taken into consideration. Particularly, we give importance to the nature of language and language learning and relate this to the students' linguistic and functional needs and to course and classroom methodology. In addition, some other psycho-pedagogic factors are significant as well. Teachers should be motivated to communicate in English, meanwhile they should express some tolerance and knowledge of students' problems such as errors and mistakes in relationship to various linguistic and sociolinguistic parameters.

B. Students

On the other hand, it has been observed that students are concerned with different factors that are involved in learning to communicate in English. One can notice a clear disparity in the level of students' motivation to learn content in English. Their attitudes are different in classroom situation especially their preparedness, desire and reactions to acquire knowledge and to seize the opportunity to use English. For instance, many students were reluctant and lacked confidence to use English in classroom interaction which they justified by their low proficiency in English, their fright of 'losing face' in front of the class, and many other elements that can be generally classified in the various sociocultural and psychological barriers.

Furthermore, many students indicated that the context- classroom situation- in which they are required to use English (classroom interaction) that actually poses two serious problems. The first drawback is that they do not exactly grasp their role in connection with the appropriate discursive strategies, and the second problem concerns their ignorance of the nature and type of relationships (in terms of communication in English) they should hold (student's role) with the teacher and other students in the class. The majority of students recognized that they have absolutely no difficulties in understanding the course content or achieving the different classroom activities which are related to their specialism (Economic Sciences) in English. In sum, in this particular situation which involved students of Economic Sciences, the essential of the difficulties do not emanate from the content part of the course nor the purely linguistic aspects of language such as the structure, phonology and vocabulary, but rather from their inability to use discursive strategies in conversation management like how not to monopolize the floor, when to interrupt, turn-taking, how to seek information or provide it, etc. One can acknowledge that students of Economic Sciences (the case study) have raised a serious issue in the question of EMI/ICL implementation which is rarely handled by specialists- classroom interaction and discourse strategies- that should be given

more importance and the discourse analysts' contribution is earnestly needed.

C. Classroom Methodology

In view of the numerous noticeable pedagogical events that have occurred during the classroom observation sessions of the case study, one can advance that the teaching and learning methods used in an EMI/ICL course should be determined by a number of factors such as:

- Learners should successfully communicate in English to however limited an inaccurate extent, at least during the preliminary stages, teacher's role is primordial in encouraging, motivating, and valuing students' use of English in classroom interaction.
- A s a matter of fact, classroom interaction should be- to a great level- performed in spoken English while written materials should be devoted to targeted tasks in small group activities.
- Teachers should master innovative teaching methods and materials that are assisted by modern technology, for example the introduction of Artificial Intelligence in the language skills and classroom content activities.
- Teachers should be aware of students' attitudes toward the English language, especially their discursive abilities if their proficiency in the language is low, their sociocultural prejudices, and the lack of self-confidence and fright of other students' ironic reactions or mockery. For instance, during the classroom observation sessions of the Economic Sciences students, some classroom mates mimicked and made fun of the students who communicated in English instead of Arabic or even French. This is only one issue that necessitates urgently the pedagogical changes that should be introduced in the EMI/ICL context.
- Ultimately, students must be able to transfer the content/language they learn to the pinnacles of scientific research and publications.

4. Recommendations

A. Teachers' Pre-Service and In-Service Training

There is a natural reluctance on the part of many teachers to accept the need for the new skills and knowledge which arises from an EMI/ICL approach. This attitude must be acknowledged, and is likely to be modified through an in-service training programme of a high professional standard and backed by adequate resources and finance through the institutional support in higher education settings. However, there is also the need for novice teachers taking on EMI/ICL courses to be presented with proper job specifications and go through appropriate pre-service training programmes which enable the teacher to recognize the responsibility he is undertaking so that teachers come into the work with a commitment to learn new skills for a new type of content/language teaching. Generally, the major objectives of pre-service and in-service training programmes are summarized in the following:

- To refresh and develop teachers' competence in English in order to improve their oral performance in terms of methods of oral teaching.
- To improve teachers' knowledge of their students providing pedagogical, psycho-pedagogical and teaching methods. In consequence, teachers

would eventually acquire some significant tools that enable them to exactly determine the degree of literacy, proficiency in English, and students' levels of motivation.

- To emancipate teachers' competence in the classroom. Such an objective can be achieved through locally-based supportive activities among specialists and international collaboration with well-established and recognized higher education institutions.

B. Tutorials.

The planning, organization, contents, and application of tutorial sessions can be peculiar to individual universities depending on the local situation, means and conditions. Nevertheless, there are some general objectives and principles that should be realized for successful and effective tutorials:

- Students should be informed in advance about the particular topics being programmed.
- Classroom interaction should not be too informal: the tutor or teacher should make sure that digressions or the abusive use of the mother tongue are kept to a minimum.
- Students should necessarily do some reading of the course content in English as an essential outdoors activity.
- The desire to communicate in English should be encouraged and developed because it is crucial that students should not worry about losing face or making mistakes not only in their specialisms but also in communicating using the English language.

5. Conclusion

In summation, the present article highlighted the complexities of introducing EMI within a context marked by a strong influence of French with regard to teaching science and technology at tertiary instruction, the varying levels of preparedness among students and teachers, and the need for careful consideration of sociocultural and psychological factors. This research work contributes to a deeper understanding of the process- in full swing- of the implementation of EMI in Algeria. It underscores the importance of considering the specific local context, including linguistic history of sociocultural dynamics, when adopting EMI.

Furthermore, the investigation emphasizes the need for adequate support and preparation for both teachers and students to ensure the successful and equitable integration of EMI within the Algerian higher education system. This article equally made a forward projection of the probable transition of EMI toward ICL in the near future. It revealed that the premises are quite promising and the perspectives of astounding achievements are already emerging in the horizon. Besides, the findings can constitute a contribution for future research in ICL.

Looking ahead, the evolution of EMI into ICL in Algeria will necessitate ongoing research and the sharing of best practices. In fact, it is important to develop evidence-based strategies that cater the various needs of students and educators in diverse EMI/ICL settings. We advocate the fostering of a culture of collaboration, the provision of adequate resources, and the sensitivity to the linguistic and cultural contexts in which EMI/ICL is implemented. On the whole, specialists should

acknowledge that Mahatma Gandhi- whose patriotism, militancy, and long-lasting struggle for the independence of India from the British colonization cannot be questioned- had already suggested, eighty-five years ago, the founding philosophy of the utilization of the English language in science and also culture: "English is the language of international commerce, it is the language of diplomacy, and it contains many a rich literature, it gives an introduction to Western thought and culture. For a few of us, therefore, knowledge of English is necessary."
Lastly, the success of EMI programmes mainly depends on the adoption of effective academic approaches that assign the priority to language support, teacher pre-service and in-service training, and culturally sensitive pedagogy. Nevertheless, it is essential to ensure that the pursuit of EMI implementation does not jeopardise the quality of content learning and, consequently, a well-balanced curriculum (content/language) would create an equitable teaching/learning environment.

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