

# Teaching English to Science Students in Algeria: Challenges, Needs, and Curriculum Recommendations

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## Abstract:

English is the third language in Algeria after Arabic and Tamazight(as national languages) and French (as the first foreign language or the second language). It gained this position because of its implementation in the Algerian educational system after two main stages of *Only Arabic* then *a Mixture of Arabic and French*. It was chosen by policymakers and the Algerian people due to its universality and dominant use in several fields around the world including science and technology. The integration of the English language did not take place successfully which resulted in many gaps in most students' knowledge of English whether at the end of secondary education or university studies. In order to teach and/or learn English effectively, the English curriculum should be designed according to learners' needs. PhD science students -as a case study- have specific needs concerning English in their studies and professional lives including reading and writing articles, participating in forums, submitting to international journals, etc.

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Those needs represent the gap between the requirements of their career as learners or professionals and the knowledge they actually had in school or university. This study aims at identifying this gap and identify the students' difficulties. It also attempts to suggest possible, practical solutions to fill in this gap and overcome these difficulties. It is hoped that the data gathered in this work may help improve and adapt the way English is taught in the Algerian universities for science branches in particular. The content of the English curriculum should be revised taking the learners' real needs into consideration.

**Key words:** English in Algeria; English for Science and Technology; Learners' needs; the English course.

### **1- Introduction:**

English in Algeria is considered a foreign language. Arabic and Tamazight are the two official languages of Algeria. Tamazight, or Berber, became a national language in 2016 (Souag, 2016). The second language is French (L2). For a long time, English was given great importance neither by the educational system nor by Algerian people. Students began studying English (as beginners) at the secondary school. Arabic was the official language for many years until French dominated several fields including most branches in higher education especially sciences.

Students used to have almost all their studies in French (and Arabic less frequently). English was not taught until it was introduced as an extra module (subject) in some of these branches in which students -in best cases- learned some terminology and technical terms in their fields of study.

In previous years, students who pursued their higher education studies, mainly as PhD students, faced an obligation to use English for two major reasons: (1) reading and analysing sources of information in their field

(books, theses, and especially articles) which were mostly written in English; and (2) writing their own articles in English in order to get them published in international journals. In addition to that, they have also found themselves in need to learn how to speak it in order to participate in international conferences and study days.

These urgent obligations to use English created a crucial need to learn it and learn how to use it to fulfil their objectives. This need resulted in their search to learn General English (GE) since they were not aware of the existence of English for Science and Technology (EST) as a branch in English for Specific Purposes (ESP). This specialised field was developed to help international learners of English to learn the English skills they need of studying GE; this is expected to save them both time and effort.

Many problems emerged after the development of this need. Learners' low level in English, getting used to reading and writing in French in their fields of study, and the short time they had for learning what they need exactly from English are some of the emerged problems. These problems could be solved if the students were taught English according to their needs instead of learning GE.

In order to have a better vision on students' needs and weaknesses, and obtain enough knowledge about the extent to which teaching English at university was effective to science students, an experiment of two phases was carried out as follows:

- 1) Interviews with a sample group of students which aimed to have an overview on their problems and needs. The direct questions and answers helped to gain a clear vision on the students' weaknesses.
- 2) Analysing pieces of students' writings that describe part of their work (experiment, methods, results, lab reports, article's review, etc.).

This analysis aimed to detect their errors and build an image on their linguistic problems and weaknesses. The detected errors were classified according to their types and frequency.

This study shows that how English was taught in pre-university stages should be revised and/or adapted by designing the English courses according to the learners' needs of every branch.

## **2- The Status of English in Algeria and the Algerian Universities:**

The Algerian -first- language situation was complex. It was at a "crossroad of tensions between French, the colonial language, and Arabic, the new national language" on the one hand; "Classical Arabic versus colloquial Algerian Arabic" on the other hand; and on another side there were many "Berber dialects versus Arabic" (Rezig, 2011). This situation appeared immediately after the Algerian Independence (1962). There was no sign for the English language in this struggle of languages.

At that time, the whole country was under an "Arabicising" plan during the government era of the late Algerian president Houari Boumediene (especially after 1973). The president refused and aimed to restrict the use of the colonial language; French. For that reason, Arabic was and for a long time the only language of education (Benrabeh, 2013; Mami, 2013; Belmihoub, 2018).

Further, Algerians, and so the government or policy makers, had realised that only Arabic would not help the Algerian education and society. A need for learning foreign languages appeared especially after the concept 'global village' came to surface.

French -and despite the ideological issue it gained in Algeria- was considered the second language. In universities, the scientific disciplines were taught "primarily in French or in an Arabic-French code-switching

mode" (Amazouz, Adda-Decker, & Lamel, 2017); they still are. For some time, French was and still is the language used by most university teachers which led students to learn those fields in French; therefore, their built knowledge in these fields was in French.

Concerning English, it was not easy for policymakers to decide the objectives of its teaching and learning as a foreign language. The reason was the fact that Algeria "has witnessed turmoil in the choice of the languages used in education" (Mami, 2013). After introducing English in national education (middle and secondary education), even learners were not aware of the objective of learning it. The only motive was probably grading(marks) for "grades have a significant motivational influence on students" (Stan, 2012, p. 1998).

Nevertheless, English gained an important role in this global community. English (with its historical and linguistic features) becomes the "primary language of New Media (e.g., Satellite TV, and Internet)". For the same reasons, English won the position of being the language of international communication in several fields including business, technology, tourism and entertainment (Rao, 2019). This is why English now should make part of -almost- all educational systems, not only in Algeria, but around the world.

The English language entered the educational system in Algeria gradually. First in middle and secondary schools only. It was, later, introduced in universities as a specialty (a university major) and within other fields -including different science branches- as a separate module (subject). As part of the university studies, doctorate students in most fields are expected to use English during their research period either to read and use sources of information in their field (which are mostly in English) or to

communicate their findings in the form of published articles. Since PhD is an advanced stage in these students' studies during which they were mostly used to French and Arabic, the sudden shift to English in this stage created several challenges which led students to take longer time to finish their PhD studies, and find difficulties publishing their articles.

### **3- The Research Methodology:**

#### **3-1-Population and Sampling:**

The experiment was conducted with a group of 40 PhD -NNS- science students of several disciplines which are chemistry, biochemistry, pharmacy and biology from different Algerian universities. These disciplines meet on many lands and have related concepts, including research, experimentation and communication of methods and findings. The students -as well- share similar backgrounds as they started university in almost the same period, had their studies in French (with limited use of Arabic), and had a low level of English compared to French.

The students share similar difficulties with English. They used to study in French but they were obliged to use English for several purposes during their PhD phase. Reading, writing and communicating (speaking and interacting) are the most required skills in English by these students. These students showed interest in learning English or finding solutions to the problems they encounter with during their studies.

#### **3-2-Research Tools:**

In order to gather information about the difficulties faced by science students, two main qualitative instruments were used in this research: interviews and error analysis. The interviews aimed to build an overall idea about these students' needs and problems. The direct questions helped the

interviewees to communicate freely and explain their thoughts, opinions and experiences. The interviewing method allowed the researcher to ask for clarification or extra information whenever required. It provided a direct access to what is “inside a person’s head”(Nunan, 1992). It also allowed to remind the respondents and stimulate their memory with possible situations. The interviews provided a general view on the students' needs. It also cleared the image of how English was taught in some science departments in the Algerian universities.

The interviews were conducted individually with the students. The questions were structured but some of them were improvised according to students' responses. The interview consisted of 20 questions (yes/no and informational questions). The questions were concerned with three major areas about the topic:

(1) **English in the Algerian Universities:** How English is taught at university, what content was presented and how beneficial they were to students. These questions aimed to know the content of the English lessons in university for science fields. It also sought to check the effectiveness of these lessons in students' further requirements.

(2) **The students' level and awareness of their needs:** What their level in English was, whether they realised what they needed exactly, and if they precisely determined what they had to study. This set of questions enabled to recognise their level in English and their recognition of the prerequisites they need to use English in their studies.

(3) **The strategies used by the students to fill in the gaps of their English level and learning:** How they used to overcome their problems, what sources of information they usually utilised, and what kind of help they found in order to use English.

The second research tool was the linguistic analysis of students' pieces of writing in English which aimed to dig deeper into their problems and weaknesses and build a larger image about their needs. This analysis detected the language errors committed by students in their writings. Those errors were classified according to their type and frequency.

The extracted errors were categorised into two types: (1) lexical and grammatical errors and (2) rhetorical errors. The first type covered features such as: the use and choice of words, spelling, articles, tenses and sentence structure. The second type included style, coherence and clarity. The classification of errors according to frequency allowed to understand which language aspects are most problematic to these students. These errors enabled to recognise the gaps in learning English for these students.

#### **4- Results and Discussion:**

##### **4-1-Science Students' Problems:**

The interviews provided an insight on the level of the questioned students and how English was taught in the departments where they belong. The majority of the students (87.50%) declared that their level is below average. Only few of them considered their level to be either good (05%) or average (07.50%).

According to the students, the lessons they had did not meet their needs and were not useful when they needed to use English. All the students (100%) mentioned that the focus of the lessons they had in English was on terminology only. They did not learn how to write scientific texts or how to read to extract information. The reason could be the fact that they were not aware of their needs from English before they became PhD students. Some students (12.50%) mentioned that they have dealt with texts but only to use words in context (which is again about terminology).

The students mentioned also that they thought French would continue to be the language they have to use in their coming career duties, whether they were studying or working. This thought led them to care less about the English module and its content.

The interviews revealed some of the strategies used by the students in an attempt to enhance their level and overcome their problems especially with writing and speaking. Searching the Internet, using dictionaries, imitating others' writings and translating from either Arabic or French were their most used techniques.

The analysis of their writings showed their linguistic difficulties and the language points revealed by the frequency of the occurrence of errors. The areas, which were most problematic to the students, were the choice of words, spelling and punctuation, the use of tenses and verb forms, sentence structure, personal language and ambiguous utterances. Table 1 below provides examples of some of the detected errors.

Table 1. Examples of Errors.

| Errors                | Examples                                                                                           |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Word choice           | -The <i>reach</i> substance ...<br>-The <i>likelihood</i> of reactions ...                         |
| Spelling              | Equipements – Acide – Sensible                                                                     |
| Punctuation           | -The obtained solution and the extracted substances, were added together to get the final product. |
| Tenses and Verb forms | -The experiment <i>has leads</i> ....<br>-The 0.5 g of alkane <i>must to</i> be added ...          |
| Sentence structure    | -Three methods <i>which</i> were used to examine the sample.                                       |

|                   |                                                                               |
|-------------------|-------------------------------------------------------------------------------|
| Personal language | -I have applied Method X.<br>- We observed the emergence of the green colour. |
| Ambiguity         | -The water samples are better taken in beakers or flasks and test tubes.      |

The identified problems from the interviews conducted with the students and the analysis of their written texts can be summarised as follows:

- The lessons' content during their university studies were not efficient to fulfil their "new" needs in this stage of their study career -PhD;
- Students have low level of English. Most of them have basic level -at their best- that allows them to express themselves in casual or informal situations only;
- Students find difficulty integrating into the professional environment. Participating in scientific forums, study days and conferences and publishing in international journals require high-level skills of speaking and writing in English;
- They do not know how or what to study in English in order to overcome their difficulties. Studying English (GE) is time and effort consuming adding to their scientific engagements in addition to their unawareness of the existence of EST which might save them time and efforts;
- The interference of French is noticed (as the language used during their studies and most students master it) in their writing in English. It also appeared in their communication in the form of cognates (false friends);

- Generalised -false- thoughts about science communication in English; for example: the excessive use of the passive voice, the use of jargon, the use of some expressions that are not accepted in scientific discourse, the desire to sound scientific and showing off; and,
- Students show unfamiliarity with some lexical and grammatical features in English (sentence structure, tenses, word choice, punctuation).

#### **4-1-Science Students' Needs:**

The detected problems uncovered science students' needs of English and shed light on their areas of interest. Recognising these needs help in providing solutions to their difficulties. Some of the most common needs and difficulties experienced by PhD science students with the English language include the following:

- ✓ Understanding academic vocabulary: PhD science students often encounter complex scientific vocabulary that can be difficult to understand, especially if they are not familiar with the terms in English. This can affect their ability to read and comprehend scientific texts, as well as to communicate their own ideas effectively in writing.
- ✓ Writing in a scientific style: it requires a particular kind of language and syntax that may be unfamiliar to them. PhD science students may struggle to express their ideas clearly and concisely in writing, which can make it difficult for them to communicate their research findings effectively.
- ✓ Speaking and presenting: these students are required to present their research in English, either in oral presentations or in written

reports. They usually find it challenging to speak fluently and confidently in English, which affects their ability to communicate effectively.

### **5-Limitations of the Study:**

Despite the fact that the selected population share the same learning conditions in the Algerian universities, the ability to generalise the obtained findings of this research beyond the chosen sample is limited. In other words, this study cannot be generalised. The results are rather subjective than objective because they were only from students' perspective. There are several facts that were not taken into account; for example, the fact that students might not have regularly attended the English classes, or simply they could not remember everything they have studied. It would be more efficient if teachers were asked about the content of the English course at university.

Another limitation is that there might be other students (whom we met in previous studies about the same area of interest) who have a better level in English and could overcome those problems easier. Those students could find better solutions to their weaknesses because they were more aware of the linguistic issues, they usually found difficulties with (some of them got help and guidance). Similarly, there is a possibility for some students to have supervisors who master English and help them write or speak correctly.

### **6-Implication of the Study and Recommendations:**

On the basis of the students' responses in the interviews and the classification of errors, the English language learning and teaching can be improved in order to meet learners' needs. For students in advanced levels, an English for science course (a group of lessons) can be designed in an attempt to fulfil their needs and help them overcome their difficulties with

the language. Scientists working in laboratories and research centres may use this course to enhance their performance when using English.

In order to make the English course more efficient, it is suggested to classify learners according to their level and interests. Knowing their levels and identifying their needs enable to design lessons accordingly and effectively since low-level students require thorough explanation and clarification and more details and practice as compared to high-level ones. The main content and the points to focus on in the designed course can be as follows:

1. Academic vocabulary: The course should teach students the academic vocabulary necessary to understand and communicate scientific concepts effectively. This includes technical terms, jargon, semi-technical terms and scientific language conventions.
2. Writing skills: The course should focus on developing students' writing skills, particularly with regard to scientific writing. This covers showing them how to structure scientific papers, write abstracts, and use appropriate scientific language and style.
3. Presentation skills: The course should help students develop the skills they need to present their research in English, including oral presentations. This can involve teaching them how to structure a presentation, use effective visual aids, and speak confidently and fluently in English.
4. Reading comprehension: The course should cover reading comprehension skills, particularly with regard to scientific texts. It focuses on explaining how to read for comprehension, identify key information, and understand complex scientific concepts.

5. Listening and speaking skills: The course should include listening and speaking skills with reference to academic and professional contexts. It highlights providing how to participate in academic discussions, ask questions, and engage in scientific collaborations with peers. (Boudjemaa & Nacif, 2021).

In each of these courses, using examples and illustrations from their own productions may increase the understandability and comprehensibility of the learners and allow them to stand at the points they usually fail to understand or use.

Another suggestion might be the way English is taught from the beginning of the students' education career, whether it starts at primary school or at middle school. It may present basics of the general English then when they reach secondary school, they study ESP depending on the branch they follow: either literature for literary stream, EST for scientific branches (Maths, technical or science) or English for Business and Economy (EBE) for business and economy branch. At university, they start with ESP in their specific field. Teachers, as well, are supposed to be well-informed of learners' needs and trained about the suggested course.

In this vein, there is a recent call for the implementation of English in almost all of the fields in the higher education by a group of people including scholars, workers, parents and students as well (Mazzouzi, 2020). English dominates in their lives of learning (especially self-learning and training), working, communicating and entertaining. Implementing English in universities and improving its position in the educational system allow to expose the Algerian education to the international community.

## 7-Conclusion:

Using English correctly and appropriately is a must-have skill for science students. The way it was taught at universities -especially in science departments- was thought to be inefficient since students in these departments faced difficulties using English in their PhD studies. In order to improve this inefficiency, the English course should be revised and designed on the basis of these students' needs. The most significant requirements of - Algerian- PhD science students were mainly learning how to use English appropriately so as to communicate their thoughts and findings in their fields of interests. This communication encompasses several skills including reading, writing, speaking and interacting. An EST-based course can be a suitable solution to fulfil such requirements. Making both teachers and learners aware of these requirements is an important step to achieve the necessary knowledge for the required skills.

### 8-References:

- Amazouz, D., Adda-Decker, M., & Lamel, L. (2017). Addressing Code-Switching in French/Algerian Arabic Speech. *Interspeech Stockholm, Sweden*, 62-66.
- Belmihoub, K. (2018). English in a multilingual Algeria. *World Englishes*, 1-22.
- Benrabeh, M. (2013). *Language Conflict in Algeria*. Multilingual Matters.
- Boudjemaa, K. & Nacif, L. (2021). Writing Scientific Articles in English: Algerian Science Students' Needs, Problems and Solutions. *Anthropologia*, 7(2), 333-348.
- Mami, N. A. (2013). Teaching English under the LMD reform: the Algerian experience. *World Academy of Science, Engineering and Technology (WASET)*, 243.
- Mazzouzi, R. (2020, January). *Algeria's latest step toward English in education poses logistical challenges - al-Fanar Media*. Al. Retrieved 2020, from <https://al-fanarmedia.org/2022/08/algerias-latest-step-toward-english-in-education-poses-logistical-challenges/>
- Nunan, D. (1992). *Research methods in language learning*. Cambridge. Cambridge University Press.
- Rao, P. (2019). The Role of English as a Global Language. *King Faisal University*, 65-79.

- Rezig, N. (2011). Teaching English in Algeria and Educational Reforms : An Overview on the Factors Entailing Students Failure in Learning Foreign Languages at University. *Procedia - Social and Behavioral Sciences*, 1327.
- Souag, L. (2016). Tamazight official in Algeria. Retrieved 2020, from <http://lughat.blogspot.com/2016/01/tamazight-official-in-algeria.html>
- Stan, E. (2012). The Role of Grades in Motivating Students to Learn. *Procedia - Social and Behavioral Sciences*, 69, 1998-2003.