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The Discrepancy between the Algerian Language Policy in Higher Education and Science Students' Attitudes towards English

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Abstract:
This study focuses attention on the areas of language policy and language attitude in higher education. It aims at examining the relationship between students' attitudes towards English and the current Algerian language policy in science faculties. The study provides ample evidence that the language policy practices in the Algerian science faculties are not responsive to students' attitudes and linguistic needs. It also shows that although English is the language of science and technology of this era, French is still the language of teaching and learning of core science subjects in Algeria. Moreover, this attitudinal survey shows that even if students fail to master English, they hold a fairly positive attitude towards it. Students also think that in order to eliminate the linguistic disadvantage they face in the world of academia; actions must be taken by governmental bodies to ensure that English will be the major medium of tuition. The paper also suggests that more measures in the Algerian language-in-education policy should make a paradigm shift towards using English in all the scientific realms to fulfil students' linguistic needs.
Keywords: Language Attitudes, Language-in-Education Policy, English for Science and Technology.

ملخص:
تركز هذه الدراسة على سياسة اللغة و المواقف اللغوية اتجاهها في ميدان التعليم العالي. فهي تهدف إلى دراسة العلاقة بين مواقف الطلبة اتجاه اللغة الانجليزية و سياسة اللغة الحالية للجزائر في كليات العلوم. تظهر الدراسة أن ممارسات السياسة اللغوية للجزائر في كليات العلوم لا تستجيب للمتطلبات اللغوية للطلبة و لا تعكس طموحاتهم. بالإضافة إلى هذا فإن هذه الدراسة تبين أنه بالرغم من أن اللغة الانجليزية هي لغة العلوم و التكنولوجيا لهذا العصر إلا أن اللغة الفرنسية لازالت هي لغة تعليم و تعلم العلوم في الجزائر. كما تظهر أنه بالرغم من أن الطلبة لا يتقنون اللغة الانجليزية إلا أنهم يحملون مواقف إيجابية اتجاهها. توضح الدراسة أيضا أن الطلبة يضنون بأنه إذا أرادوا إزالة العوائق اللغوية التي يواجهنها في المجال الأكاديمي، يجب على الحكومة أن تتخذ قرارات صارمة تضمن استعمال اللغة الانجليزية كوسيلة تدريس و تعلم العلوم. لذلك فإن هذا المقال يقترح إجراءات عملية فيما يخص سياسة اللغة في الجزائر في مجال التعليم تضمن من خلالها التحول إلى استعمال اللغة الانجليزية في الميادين العلمية من أجل إرضاء الاحتياجات اللغوية و العملية للطلبة.
الكلمات المفتاحية:المواقف اتجاه اللغة، سياسة اللغة في التعليم، اللغة الانجليزية للعلوم و التكنولوجيا

Introduction:
The increasing interest in and the desperate need for learning foreign languages seems to exert a great influence on the choice of languages taught in higher education worldwide. In fact, the expanding phenomenon of teaching or learning at least two foreign languages is the direct result of the internationalization of higher education which is becoming far more critical due to the invaluable outcomes and benefits it brings to the social, political, cultural and economic states of societies.

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Moreover, the success of higher education entails the establishment of the most effective international cooperative programmes with the other universities worldwide to take full advantage of the latest knowledge and experiences of the others. This collaboration is further elaborated by the extensive use of English because it has become the language of the elite universities, scientific and technological breakthroughs and business and economics.

In light of these modern trends, English use, teaching and learning have been growing faster than any one has ever expected. English has become the worlds' language with more than a billion users. English also stands out from the other languages as the most preferred language of tertiary education in most parts of the world. What is more, English is now the language of science and technology because almost all scientific publications and conferences are in English. Hence, it is widely claimed that 'nowadays an illiterate is somebody who does not know computing and English'. Moreover, "[English is] a language–the language–on which the sun does not set, whose users never sleep" (Quirk et al., 1985:1). Strangely enough, in Algeria, science students do not know even the basics of the English language. Moreover, English is a non-compulsory subject in almost all scientific domains. Arguably, it is rather astoundingly shocking to know that this subject does not disturb the Algerian government as little has been done to improve the teaching and learning of English in science faculties. In addition, research investigating the genuine causes of this state of affairs and its profound impacts on students' academic and professional success in the short and long run are very few and far in between. Furthermore, science students' attitudes towards English have rarely been the subject matter of research works. All of these critical themes have been the driving incentives that spurred us to embark on this study.

This paper starts out by providing a brief account on the relationship between language-in-education policy and language attitudes towards the use, teaching and learning of foreign languages in higher education. It subsequently tells why English is the language of science and technology before analysing the status quo of English use and teaching in the Algerian faculties of sciences. The discussion moves then into the analysis of the data obtained from the study to generate a number of inferences and pedagogical recommendations.

I. The Relationship between Language Attitudes and Language-in-Education Policies

In macro-sociolinguistics, language attitudes refer to the set of feelings, perceptions or behaviours which are "entertained towards a language, a culture or a group of people" (Diallo, 2005:92). In other words, attitudes in relation to language learning point to strong positive or negative emotions experienced by students when they are learning and/or using a language, be it native or non-native. Therefore, one of the central concerns of large-scale attitudinal studies

is to reveal what kind of attitude teachers and students hold towards foreign languages, and what importance those languages have in their future empowerment. Moreover, language policies in education are meant to eradicate language-related problems and fulfil the linguistic needs of teachers and students. Accordingly, they must follow systematic, rational and objective methodologies to gain the necessary sympathy, support and acceptance. It follows then that much of our views about languages are shaped and reshaped by education.

Research shows that hostile and ambivalent attitudes towards any particular language deeply affect both popular sentiments and judgements on the language's structural features and pragmatic uses (Dörnyei, 1998; Ellis, 1997; Gass and Selinker, 2008; Krashen, 1981; Leaver, et al., 2005). Moreover, education is certainly influenced by the feelings people hold towards the languages being learnt or used as the media of instruction. Thus, a bulk of studies on first, second, and foreign language acquisition investigate the impacts of learners' motivation and attitudes on the language learning route (Fattash, 2013; Kim, 2006; Mat and Yunus, 2014; Xu, 2010). In fact, language attitudes are not intrinsic, innate or inherent, but rather learned because people are not born with any peculiar mindset favouring or opposing any specific linguistic system. For this reason, the educational systems, from primary to tertiary, are the most suitable and powerful instruments for manipulating and controlling students' attitudinal and behavioural orientations towards the languages they are supposed to get in contact with during their academic, professional and, even, personal lives.

The social-psychological quantitative and qualitative studies aptly confirm the diversity of language attitudes within speech communities and their changeability over time (Bekker, 2005; Groves, 2008; Marley, 2004). Language policy is very much dependent on how much people esteem the language being used in education. In order to maximise the attainment of positive attitudes towards any language, the government needs to rely on education and media campaigns to increase people's exposure to that language and elucidate its importance and utility in their lives (Dwyer, 2005). Moreover, because the language is tightly linked to the group's identity, cultural heritage and self-esteem, the use of foreign languages as a media of education or the teaching and learning of them as compulsory or optional subjects should not affect or threaten the culture, the outlook and the inner psyche of the speech community. In short, Ferguson (2006:15) claims that "Language policy is decisively influenced by our attitudes to languages, to beliefs about their power, beauty, or utility, and their role in national, ethnic, or religious identity".

Our common sense backed up with scientific and empirical evidence tells us that the more students cherish the language they learn or use, the more

effective language learning or use would be and vice versa. However, one can safely argue that in so many cases, such a correlation is not valid. More often than not, even if learners hold negative attitudes towards a particular language, they do acquire it successfully and make use of it on a frequent basis. This state of affairs is very common nowadays due to the unprecedented necessity for anyone to know an international language whether s/he likes it or not. That said, the pragmatic ends from learning a foreign language, more particularly English, stifles individuals' linguistic freedom because it is no longer a matter of choice for researchers, teachers and students to choose not to master the world's lingua franca (English) to keep abreast of the modern scientific and technological advancements and contribute in and be part of the globe's scientific legacy.This matter raises the question of whether it is the government's duty to ensure that all academics and students must be fluent users of at least one major foreign language through the initiation of certain well-established programmes, high-tech materials and facilities, or it is the individuals' responsibility to be plurilingual seeing that the modern trend in education emphasises the role of learner autonomy.

In many cases, students prove a very low awareness of the practical benefits associated with the mastery of English. Put differently, even if English does enjoy a very high status globally for it aids in opening up new opportunities and perspectives for individuals and societies as a whole, students fail to envisage such a significance because English has a very limited pragmatic vitality within the borders of their society. Clearly, when the use of English is inadequate in informal (at home, in everyday transactions...) and formal settings (in future employment, in administration, in the media, in education, etc.), its value would diminish dramatically as very few people would like learn/use it. Such cases are very prevalent in post-French colonies (Algeria is undoubtedly the best exemplar par excellence). Arguably, the negligible utility of English in Algeria is planned by the Francophonie movement. Spolsky (2004) maintains that the ultimate goal of this movement is the maintenance of the dominance of French in ex-French colonies by providing political and financial backup to boost the use and teaching of French and seize support and teaching of English so that French will be prevalent in people's minds and their everyday interactions.

All in all, language-in-education policy and language attitudes are tightly related to each other. However, in several cases, the language policies of education counter the aspirations and needs of teachers, students and the society as a whole as most of them are economically, politically and ideologically motivated, and not academically oriented.

II. English: The Language of Science and Technology

For decades, English has been the main language of science and technology. In light of this, most scientists, researchers and academics believe

that contact with scientific English and adherence to its norms are very beneficial for their research progress. Therefore, whether English is their second or foreign language, they feel rather obliged to function in English in all that they do (written works and scientific gatherings, etc.). In actual fact, they maintain that deficiency in English puts them at a serious disadvantage compared with native speakers of English. As a consequence, most of them write exclusively in English and claim that their research would be undervalued if it were written in any other language.

The flexibility of English in expressing the scientific knowledge has contributed a lot in approving it as the language of science and technology. Put differently, English has always been willing to borrow words from the other languages to express the multiple new ideas and inventions taking place in different parts of the globe. Furthermore, because of the huge number of professionals who have a command of English, it is widely accepted now that English is sufficient to express the scientific knowledge. However, the most prominent factor that reinforces the position of English as the language of science and technology is the great strength of USA research in the market. Certainly, the scientific commodities of the USA tend to have the same excellence in theoretical level as in practical one. Nowadays, it is next to impossible for anyone to publish a work without discussing American premises, arguments and hypotheses. English is the language of science and technology because it is the language of the elite universities of the world; USA universities. Statistics evidently reveal the superiority of US universities in the multiple fields of science and technology. According to the 'Academic Ranking of World Universities' (ARWU) released by the Centre for World-Class Universities at Shanghai Jiao Tong University, and the '*Times Higher Education* World University Rankings', over the last decade, US universities have consistently outperformed their counterpart in Europe and elsewhere, and have already taken the lead in the ranking tables. As a matter fact, in all domains, more than 50% of the first 100 universities in the world are in the USA. Furthermore, most of the other top universities are in the English speaking contexts like UK and Australia or where English is dominant in higher education as it is case in Canada, Japan and Switzerland.

Today, there seems to be a pragmatic multilingualism in existence; a situation in which people have rightly realised that the adoption of English is not a threat to their own languages, but rather a pivotal "key to a share of the world's symbolic power: towards the accumulation of cultural, political and economic capital" (Chew, 1999:43). Figure 1 below is adopted from Graddol's (1997) extraordinary work '*The Future of English*' and shows the reliance of German scientists and researchers on English in carrying out, writing and expressing their research works.

Physics	**98 %**	Earth Sciences	**76 %**	Vet. Sciences	**53 %**	Literature	**23 %**
Chemistry	**83 %**	Medical Sciences	**72 %**	Economics	**48 %**	History	**20 %**
Biology	**81 %**	Sociology	**72 %**	Sports Sciences	**40 %**	Classics	**17 %**
Psychology	**81 %**	Philosophy	**56 %**	Linguistics	**35 %**	Theology	**12 %**
Maths	**78 %**	Forestry	**55 %**	Education	**27 %**	Law	**8%**

Figure 1: Disciplines in which English is the Working Language of German Academics

Numerous studies have recently examined the pros and cons of the spread of English as the language of science and technology all over the world. For example, Bordons and Gómez (2004) argued that we are moving towards a single language in sciences. In fact, they provided statistical evidence that clearly shows that the European countries including France (the holly mother of the French language and the francophone movement) are using English almost exclusively in all of their scientific research publications.

Country	**1985**		**2002**	
	All languages	**% English**	**All languages**	**% English**
France	34,191	58.80	52,142	89.08
Austria	4,011	61.88	8,596	94.03
Germany	49,046	62.21	74,551	90.37
Spain	7,017	72.08	26,939	92.08
Belgium	6,434	86.04	11,686	97.96
Italy	17,175	87.50	38,064	98.94
Portugal	449	94.65	4,168	98.99
Greece	1,591	96.61	6,193	99.73
Netherlands	12,077	97.60	21,457	99.40
Sweden	11,130	98.63	16,770	99.84
Finland	4,119	99.15	8,006	99.76
Denmark	5,345	99.35	8,999	99.82
UK	61,768	99.71	83,604	99.86
Ireland	2,489	99.76	4,989	99.90

Table 1. Percentage of Documents Written in English by European Union Countries as Covered by the Science Citation Index Expanded (Web of Science)

Bidlake (2008) examined the dominance of English as the International Language of Scientific Publication (EILSP) in the different academic fields and so did many researchers before him such as Ammon, (2001); Canagarajah (1996); Curry and Lillis (2004); Flowerdew (1999) and Tardy (2004). Similarly, Slougui (2009) investigated the language barrier that Algerian scientists face when they want to publish their works in international journals and acquire membership in the international research community. Slougui (2009) maintains that there is a linguistic bias against the submissions of non-English speaking scientists. Drubin and Kellogg (2012) claim that the main complaint of nonnative speakers of English when publishing their research is that manuscript reviewers often focus on criticizing their English, rather than looking beyond the language to evaluate the scientific results and logic of a manuscript. As a result, this makes it rather difficult for their manuscripts to get a fair review and, ultimately, to be accepted for publication. Likewise, Ferguson, et al. (2011) conducted an attitudinal survey research on Spanish academics and concluded that the dominance of English in scientific publication and academic exchange make those scholars feel rather disadvantaged in academic publication compared with their counterpart from the Anglophone countries.

From the abovementioned details, it can be safely argued that English language teaching and learning programmes are mandatory for individuals who seek a much higher proficiency and mastery of their domain of speciality. Even if English may show some sort of linguistic imperialism and hegemony in science and technology, as Phillipson and Skutnabb-Kangas (1999) and Phillipson (2003) maintain, it opens the doors for its users and equips them linguistically to cope with the new realities and drastic changes taking place in the academic and professional worlds. No doubt, it is the Third World countries that need English most to ascertain a rapid acceleration in their resources of human capital and a hurried transmission of Western technical and scientific know-how (Swales, 1997).

III. The Status Quo of English in Algerian Higher Education

To start with, it should be noted that Algeria is a multilingual country where a number of language varieties have coexisted for so long. However, the Algerian constitution dictates that Modern Standard Arabic (MSA) is the national and official language of Algeria, whereas Tamazight was recently confirmed in the constitution of 1996 as a national language, too. French is the first foreign language. It is widely used in private and public domains i.e. it is officially used in the administration (governmental institutions), the media (TV news, newspapers, etc.), the job market, and in informal settings and talks. On

the contrary, English is the second foreign language with very limited utility outside the educational institutions.

In primary schools, Arabic is the main language of tuition. French is taught as the first foreign language right from the third grade. In middle and high schools, Arabic is the medium of instruction of all core subjects including physics, natural sciences and mathematics though the technical terms and symbols of these domains have been in French ever since the educational reform of 2003 which seized the use of Arabic characters and introduced French ones. The use of Arabic in middle and high schools is the result of the Arabisation movement witnessed in the 1970s and 1980s. Article 15 of law n° 91-05 introduced in 16 January 1991 emphasises the use of Arabic in education:

Article 15

L'enseignement, l'éducation et la formation dans tous les secteurs, dans tous les cycles et dans toutes les spécialités sont dispensés en langue arabe, sous réserve des modalités d'enseignement des langues étrangères.

More recently, on the 23rd of January 2008, a law governing the orientation of national education system declares that Arabic must be the language of education in both public and private institutions:

Article 33

L'enseignement est dispensé en langue arabe à tous les niveaux d'éducation, aussi bien dans les établissements publics que dans les établissements privés d'éducation et d'enseignement.

French and English are taught 3 times a week (3 hours) in middle schools although the instructions of many laws do not specify the foreign languages that should be taught in neither basic education nor in higher education:

Article 4 (Law of the 23rd of January 2008)

En matière d'instruction, l'école a pour mission de garantir à tous les élèves un enseignement de qualité favorisant l'épanouissement intégral, harmonieux et équilibré de leur personnalité et leur donnant la possibilité d'acquérir un bon niveau de culture générale et des connaissances théoriques et pratiques suffisantes en vue de s'insérer dans la société du savoir.

À ce titre, elle doit notamment :

[...]

-permettre la maîtrise d'au moins deux langues étrangères en tant qu'ouverture sur le monde et moyen d'accès à la documentation et aux échanges avec les cultures et les civilisations étrangères

Article 35

> L'enseignement des langues étrangères est assuré dans des conditions fixées par voie réglementaire

In all the scientific streams in high schools, French and English are taught four times a week (4 hours) in the first and second years and three times a week (3 hours) in the third year. The curricula of English are of course different, to some extent, from those of literary streams with a general focus on scientific English (scientific texts, vocabulary...). However, the results of science students in both French and English in the baccalaureate examination are mostly below average.

At the university level, the use and teaching of English is very restricted in faculties of natural sciences. In most cases, English is taught as a foreign language (non-compulsory subject) once a week for just an hour and a half in either the first or second semester almost always at the Master level only. By contrast, French is the language of instruction of almost all core subjects at both undergraduate and graduate levels.

The state of the art of English would have been quite different if there had been a continuation and realisation of the multiple decisions made in 1996. In fact, in 1996, "Algeria opted to make English its chief foreign language in schools, replacing French" (Crystal, 1997:126). However, this drastic transition did not last for so long because after two or three years, French restored its former status for no particular convincing reason and English once again got marginalized. In actuality, French is seen as the language of economic prosperity and social upward mobility in Algeria. Hence, its use and learning are widespread in governmental and non-governmental institutions. In an international conference on bilingualism in the Maghreb countries,Filali (2012) explains the reasons for the prevalence of French in Algeria as follows:

> L'usage du français est une réalité quotidienne non seulement pour une catégorie de la population dans un cadre professionnel, mais pour tous les citoyens. Il en est ainsi pour plusieurs raisons:
> - la disponibilité d'une presse écrite en langue française dont le nombre connait une évolution sensible depuis les années 1990 (une vingtaine de quotidiens nationaux d'information);
> - le lancement depuis 1994, d'une chaine de télévision nationale «Canal Algérie» en langue française;
> - l'existence au sein de l'entreprise nationale de radiodiffusion sonore ENRS, d'une station nationale «la chaine 3» en français;
> - la poursuite des enseignements universitaires en français, notamment pour les matières scientifiques (médecine, pharmacie, informatique, etc.);
> - la dispense de l'enseignement de la langue française en tant que langue étrangère pendant tout le cursus scolaire (primaire, secondaire, universitaire);

- la poursuite de la publication des textes législatifs et règlementaires en langue française quelque soit le support (papier, électronique);
- la disponibilité d'une documentation en langue française au sein des établissements universitaires, de la Cour suprême, voire au niveau des juridictions d'appel etc.
- la plupart des travaux de recherches (thèses de doctorat, mémoires de magister, ouvrages, etc.) préparés en langue arabe comportent au titre des renvois de bas de page des références à une documentation en langue française et une bibliographie en langue française;
- la publication de travaux en langue française dans les revues éditées par les universités, la Cour suprême, les centres de recherches, etc.

IV. The Participants and Data Collection Procedure

The significance of the study is its value in voicing Algerian science students' attitudes towards English. In actuality, the success of the SL/FL learning process entails that students' attitudes towards any language-related issue must be considered of paramount importance by the government seeing that the academic success of students is very much dependent on their linguistic capacities. Therefore, language has a pivotal role in the success of the education system at all levels. Wolff (2006:50) claims that "language is not everything in education but without language everything is nothing in education".

The respondents participating in this research work (46 biology students, 49 chemistry students and 47 physics students) were chosen randomly to ensure that the sample was typical and representative. Among these respondents, 25 students were males (17.60%); whereas the rest (117) were females (82.39%) ranging from 21 to 26 years old. The informants are studying at a very reputable Algerian university viz. the University of Constantine 1. Therefore, this sample represents students of Algeria's elite universities. For record, the University of Constantine 1 is part of Mentouri Brothers University, Constantine, which is almost always ranked first in Algeria and the Grand Maghreb, 28 in Africa, 25 in the Arab world and 2256 in the world (Aourag and Sellami, 2014). The University of Constantine 1 has a decent profile of scientific production, at least locally and regionally, since the number of published articles until 2012, according to Aourag and Reuters (2012), was 2416 and the number of cited times was 10302. Among these publications, physics takes the lead and chemistry is ranked third; whereas biology is the one before the last as it is shown in the figure 2 below.

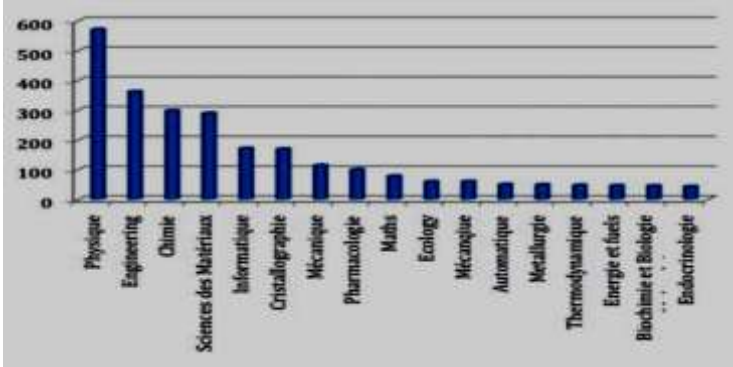


Figure 2: The Scientific Production of the University of Constantine 1 Until 2012

A structured questionnaire survey was used as a method to collect the data of the study. The questionnaire contained both close and open questions to provide both quantitative and qualitative data since the fundamental purpose of this study was not only to find out how many respondents held the same or different opinions, beliefs and attitudes, but also their multiple rationales for those values was likewise targeted. For feasibility reasons, the questionnaire was written in Arabic to make sure that everyone would 1) encounter absolutely no difficulty whatsoever in understanding what the questions are all about and 2) answer easily the questions where they were supposed to justify their opinions. Moreover, students were asked to individually answer all the questions one by one to avoid the pitfall of getting influenced by the opinions of their classmates or the contents of the subsequent questions. The questionnaire was administered and collected in the period between the 15th of February and the 18th of March 2015.

In order to make sure that the answers provided are utterly honest and reflect students' beliefs, the participants willingly took part in the study and nobody was obliged to sit and fill the questionnaire. These students did not study any English classes in their faculties in their first and second years since English is not part of the curriculum. In their third year and first year Master, English is taught to students as a foreign language once a week (an hour and a half) for just one semester, either the first or second semester. Moreover, English is not needed to pass from one grade to the next.

V. Results and Discussion

The responses obtained from the questionnaire were coded and entered into the SPSS (Statistical Package for the Social Sciences) and examined by the author of this article. The analysis of quantitative and qualitative data was done at descriptive, critical and inferential levels. Moreover, it is worthy of mention

that the current study sets itself the task of getting to the inner attitudinal feelings Algerian science students hold towards English.

Item 1. Students' Perception of the Significance of English in the Scientific Realms

Seeing that Algerian science students prove a very low proficiency in English, the main questions of this item are meant to gauge their awareness of the important role English plays in their fields of specialisation.

Q 1. *In your view, what is the language of science and technology of present-day era? Please justify your answer.*

First of all, students were asked about whether they know the language of science and technology of this era. In response to this question, the majority of the respondents (78.87%) said that English is the language of science and technology, 08.45 % of them believed that it is French, 05.63% of students chose both English and French; while 07.04% of them gave irrelevant answers. Students' belief in English as not only the language of the world but also the language of science and technology goes hand in hand with the assertions of scholars, academics and linguists (as it is shown in section II above) and reflects the prestigious status of English all over the world in all the scientific and technological spheres. Moreover, the answers of students confirm that they know that English is the language through which almost all modern scientific and technological knowledge is expressed as it is confirmed by Bordons and Gómez (2004) here:

	1980	**1990**	**2000**
English	84.5%	90.5%	95.9%
French	3.8%	1.9%	1.0%
German	5.1%	2.5%	1.1%
Spanish	0.7%	0.4%	0.3%
Japanese	0.7%	0.5%	0.3%
Total No. Documents	554,598	689,629	956,533

Table 2. Annual Percentage Distribution of Publications by Language, as Covered in the Science Citation Index Expanded (Web of Science)

This line of thought is further clarified by the students in their justifications. Some of them argued that when they conduct some research, they find that almost all the works available are in English; whereas others maintained that English is highly needed for using new machines, communicating with people from all around the world, reading articles on the net, etc. In fact, informants' views were almost identical and reflected the dominance of English over sciences:

— English is widely used and spoken all around the world and especially in the most developed countries which dominate science and technology such as the USA, Canada and the UK.

- English is widely used in the scientific and technological spheres since all the inventions, discoveries and sciences are expressed in English.
- The latest sources, books, articles, scientific magazines, encyclopaedias, guides and best scientific research works are all in English.
- Most of the pieces of information in the internet are available in English.
- All scientists from all around the world use English to express their breakthroughs and thoughts.
- Conferences and symposia worldwide in physics and chemistry are in English.
- English is needed in scientific publication.
- English is the language of all the guides of the electronic machines and smart devices.
- English is the language of this era. It is the language number one (1) in the world.
- English is the language used by people from different parts of the world to communicate with each other. It is the language of most deals, talks and communication exchanges.

Because students' views about the importance of English in their lives is also a central theme in this study, this section attempts to show whether Algerian science students believe that English is rather important for accomplishing a range of activities tightly related to their academic and personal lives. In greater details, students were asked to pin down on a scale of 1-4 how much English is important to them to perform the activities shown in this table.

Q 2. *How much is English important to you to perform the following activities?*	**Not important at all**	**Not very important**	**Important**	**Extremely important**
a) Communicating with people specialized in your field of study from all over the world.	00.00%	02.11%	39.43%	58.45%
b) Carrying on your post-graduate studies.	01.40%	06.33%	34.50%	57.74%
d) Succeeding in your studies (doing homework, acquiring much more knowledge, etc.).	09.15%	21.12%	31.69%	38.02%
e) Using the computer and surfing the internet.	06.33%	16.90%	35.21%	41.54%
f) Moving upward in the social ladder.	11.97%	14.78%	38.73%	34.50%

g) Getting a decent job.	04.22%	12.67%	37.32%	45.77%
h) Watching TV/films and listening to music.	18.30%	33.09%	28.16%	20.42%
i) Reading books and articles about your area of specialty.	06.33%	13.38%	38.02%	42.25%

Table 3. The Importance of English in Students' Academic and Personal Lives

The data in the above table show that the majority of students see English as an essential means to achieving various ends. 92.24% of the respondents claimed that English is rather vital for carrying on their post-graduate studies. However, amazingly enough, amongst the very same students, 30.27% maintained that English is not important to succeed in their current studies, and it is not needed to do their homework and acquire more knowledge. Arguably, this belief is due to the fact that French is the language through which students receive and express the knowledge of their areas of specialty in Algeria. This line of thought is further elucidated when 19.71% of them asserted that English is not required to read books and articles related to their fields of expertise. Accordingly, these students seem influenced by their teachers who are mainly francophone since the textbooks most Algerian science teachers use and the books they recommend to students are almost always in French. Lasagabaster and Huguet (2007:1) argue that teachers play a key role in the formation and shaping of students' language attitudes and their future linguistic behaviours:

> Language attitudes are learnt and, therefore, educators play a paramount role in their formation, to such an extent that attitudes formed under educator influence may be extremely difficult to change. Students who face a situation in which different languages are in contact realise in early schooling that society, family and school all place importance on these languages. The students' own assessment, together with the information and the knowledge they gain, will lead to the establishment of their attitudes towards the different languages, the speakers of these languages and to the learning process itself.

97.88% of the informants participating in this research think that English is important to some extent for communicating with people specialized in their fields of study from all over the world. In a similar vein, 76.75% of them maintained that they need English to use the computer and surf the internet. These high proportions reflect students' awareness of the key role English plays in connecting people in this globalised world.

Although, in Algeria, it is French and not English which is the language of the affluent, well-educated people belonging to high social class, 73.23% of the students believe that English is rather needed to move upward in the social

ladder. In fact, English is highly valued by most Algerian students and this is quite clear in their passion to learn it.

Moreover, 83.09% of the respondents argued that English is essential for getting a decent job, although knowledge of English is not a basic requirement to get a job in both the private and public sectors in Algeria since the working languages of administrations are either Arabic or French. However, more than a half of the students (51.39%) claimed that English is unimportant for watching TV programmes, films and listening to music. This implies that English is not considered as a major means for entertainment for most Algerians.

Q 3. *Which English language skill (writing, reading, speaking or listening) do you need most? Please, justify your choice.*

At a post-graduate level, university students are assumed to focus on developing their knowledge and expertise in their fields of specialty by reading up-to-date literature which is mostly in English. This means that students are supposed to develop their reading skill more than the other ones. Nevertheless, students' answers were astounding because among all the students 47.18% argued that they need the speaking skill, 30.28% opted for the listening skill; 13.38% chose the reading skill; whereas only 09.15% maintained that they need the writing skill.

When examining the myriad reasons and explanations provided by the informants who stated that the speaking skill of English is the one they need most, it is quite interesting to note that the majority of them think that speaking is highly required to master the other skills. Moreover, the students asserted that speaking English well is extremely important to increase the person's self-confidence, to communicate with people from all over the world, to express their thoughts and opinions, and to convince the others. In a similar way, the students who argued that listening is the most important skill claimed that listening is needed to understand the different ideas, to get the gist of multiple broadcasts, etc. Likewise, writing is believed by students to be the basis for conveying their different viewpoints. Yet, what is really amazing is that students did not say that they need the speaking, listening and writing skills of English to succeed in their studies and enrich their knowledge of their areas of study. This implies that English is not used a lot in students' studies although 80.27% of them asserted previously that they need English for reading books and articles about their areas of specialty. By contrast, the tiny number of students who argued that the reading skill of English is the most important skill asserted that they need it for academic purposes. They said that reading is very important to acquire more knowledge and succeed in their studies as it is clearly demonstrated in the reasons they provided:

— Reading is very important because I need it to read the different books and sources needed in my studies.

— Reading is extremely significant to carry on my Master and doctoral studies.
— Reading is needed to acquire knowledge.
— Reading is the key to science.
— Reading is needed for reading articles in English.
— I need English to read the articles related to all the research works I conduct.

Q 4. *Do you think that the low proficiency of science and technology students in English plays a key role in their academic failure, lack of innovation, resourcefulness, etc.? Please, justify your standpoint.*

Since most Algerian science students lack proficiency in English, students were asked whether they believe that such a deficiency has detrimental effects on the advancement of science and technology in Algeria. In response to this question, 69.01% of students claimed that students' low proficiency in English adversely affects their academic success and spirit of innovation; whereas the rest (30.98%) maintained that knowledge of English has nothing to do with that. Table 4 below gives some of the intriguing reasoning of students of both sides.

Yes	No
— Looking at the latest inventions and research, we do not find Algerian scientists as they are unable to get in contact with the world in their fields of specialty. — All sciences need English and scientists who do not master English will not be able to get access to new knowledge and information in these realms. — For invention and creation, you need to be in contact with the others from all parts of the world and English is the medium of that. — Most inventions and technology rely on English. — At present-day, all sciences originate from English countries and for this reason you need to read and keep abreast of the latest sciences. — In order to improve their scientific	— Invention and creation do not need any language. — Low proficiency in English is not a problem because China, for instance, is a highly developed nation in most scientific domains though it uses its own national language. — Invention and innovation needs intelligence only. So English does not have any relation with technological development. — Students of science and technology can succeed in their studies using any language. English is just needed to get much more information. — Language is not a basic condition to invent something because everyone can invent in any domain with his/her native language.

and technological knowledge, students need to get more information and knowledge by reading English scientific legacy. — Somebody who does not know English cannot know all the needed pieces of information in the research works he/she needs to carry out. — The person has to explain his/her invention in English so that his/her work will be credible. — Today, all the scientific publications and books are in English. So students must master this language to read literature and thus invent and create.	— There are so many people who master only French and they are very successful in sciences. — The language has absolutely nothing to do with understanding the subjects of any domain. — Invention and creation is not restricted to one particular language. — French is an alternative to learn science and technology. — In our field of study, English is not important at all.

Table 4. Students' Views about the Vitality of English in Promoting the Spirit of Innovation among Science Students

In a nutshell, Algerian science students seem rather aware of the critical role English plays in their domains. However, students contradict themselves in a number of issues. For example, even if they maintain that English is rather important to read books and succeed in their studies, they think that developing the reading skill of English is of trivial significance. Accordingly, it is highly important that students must change their mind-sets and linguistic behaviour so that English will be a central means for acquiring knowledge and expertise. Likewise, teachers are also urged to encourage students to develop their English proficiency by recommending students to read books and articles and discuss their contents in English.

Item 2. Students' Attitudes towards English

The questions of this item aim at investigating the kind of attitude students hold towards the English language and English classes. This issue is very salient in SLA. Research in social-psychology has confirmed that when students hold a positive attitude towards the second/foreign language (L2/FL) and its native speakers and culture, their learning route will be rather fast and efficient (Al Mamun, and Rahman, 2012; Bartram, 2010; Martínez et al. 2013, Muir and Dörnyei, 2013). In fact, students' attitudes towards the social perceptions of the L2/FL and its speakers largely determine their level of motivation and engagement in learning that language. In other words, the more students like the language they learn and its speakers, the more they succeed in its learning. Gardner (1985) asserts that the attitudes of students towards the

L2/FL group greatly affect how effective they learn the linguistic and pragmatic aspects of that language. Because language is the main vehicle through which the cultural aspects of communities are expressed, learning an L2/FL means acquiring new cultural practices that can be entirely different from and probably contrary to the learner's native culture. This can be seen by many learners as a real threat to their own identities and self-belonging. Bahous, et al. (2011:34) maintain that learning a L2/FL has a deep impact on the social nature of the learner since L2/FL learning "involves an alteration in self-image, the adoption of new social and cultural behaviours and ways of being".

To reveal their attitudes towards English, the informants were asked a couple of questions. They were first asked about how much they like English-speaking countries, culture, people and their ways of behaving. Their answers were mostly positive since 58.44% of the students said that they like it; whereas 25.34% said they do not like it. In a similar way, 83.79% of the students stated that they do like English and only 07.03% seem to dislike it. These statistics confirm the idea that English enjoys a very reputable status in the hearts of most Algerian learners.

Q5. *How much do you like*	**Do not like it at all**	**Do not like**	**Cannot say either**	**Like it**	**Like it so much**
the English-speaking countries, culture, people and their ways of behaving?	07.04%	18.30%	16.19%	42.95%	15.49%
the English language?	02.11%	04.92%	09.15%	49.29%	34.50%

Table 5. Students' Attitudes towards English and its Native Speakers

The respondents were also given a statement to comment on to see whether they think that studying English has undesirable effects on their culture and self-belonging. In response to this question, 84.50% of the students reported that English does not menace their identity and culture. This belief is rather legitimate since these students are adult and they have already formed a deep-rooted identity, thus they are not supposed to assimilate easily the others' cultures.

Q 6. *How strongly do you agree with the following statement?*	**Strongly agree**	**Agree**	**Cannot say either**	**Disagree**	**Strongly disagree**
Studying English will have detrimental effects on your identity and culture.	04.22%	06.33%	04.92%	31.69%	52.81%

Table 6. Students' Opinion on the Effect of English on their Identity and Culture

As the data above show, Algerian science students prove a fairly positive attitude towards English. In fact, students at this level demonstrate an instrumental motivation for learning an L2/FL. In other words, they learn an L2/FL for pragmatic reasons to achieve certain practical ends, and rarely do they learn it for integrative reasons; to become members of the L2/FL community. Latorre (1985 cited in Latorre and Kaulen, 1986) schematically shows in Figure 3 below how learners' motivation changes in an evolutionary sequence as learners make their way through the educational system from junior high school to tertiary education. In actuality, students' motivation tends to be integrative in junior high school. In high school, it is not clear whether students learn the L2/FL for instrumental or integrative reasons, but at the university, it is primarily instrumental motivation that drives students to learn an L2/FL.

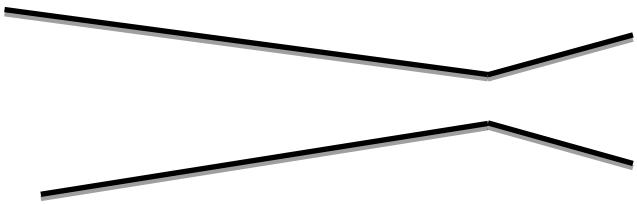
LEVEL OF INSTRUCTION :		***Junior High School***	***High School***	***College / University***	***Academic Professional***
TYPE OF LANGUAGE INSTRUCTION :		***"General" EPL/ESL***	***"Soft" ESP***	***"Hard" ESP***	***"Soft" ESP / "General" EFL***
STUDENTS' MOTIVATION:		***Integrative***	***Instrumental ?***	***Instrumental***	***Instrumental / Integrative***
	Communicative focus of instruction				

Figure 3: The Evolution of EFL/ESP Motivation Orientation and the Communicative Focus of Instruction

Moreover, students were asked about their satisfaction with their English proficiency. Their responses attest that they do not feel very happy with their English as 73.23% reported that they are not satisfied; and only 22.52% said that they feel happy with their English. These data show that Algerian science students know exactly that they have a very poor command of English.

	Really satisfied	Satisfied	Do not care	Unsatisfied	Really unsatisfied
Q 7. *Regarding your English language proficiency, you feel:*	02.81%	19.71%	04.22%	33.80%	39.43%

Table 7. Students' Satisfaction with their English Language Proficiency

The informants were also asked to state what they think of their classmates who can speak English well. In response to this question, 68.30% of the students argued that they respect them, 17.60% said that they envy them; whereas 14.08% reported that they do not care about this issue.

Q 8. *What kind of feeling do you hold towards students, majoring in your field of specialty, who can speak English well?*	**%**
You envy them	17.60%
You respect them	68.30%
You do not care	14.08%

Table 8. Students' Attitudes towards their Classmates Who Are Proficient in English

In another attitudinal question, 40.14% of the respondents reported that when they hear someone holding a conversation in English, they think that he/she is a diligent person; 43.66% think that he/she is self-confident; whereas 15.49% of them believe that he/she is an arrogant person. Indeed, in Algeria English is seen as a property of the elite. Hence, it is not very common to hear people talking to each other in English on the streets, in public places and even in the educational institutions where it is taught. Usually when somebody speaks in English people will look at him/her with utter incredulity, listen to what he/she says, even if they can hardly understand a word, and hold the impression that he/she is showing off linguistically. In fact, in Algeria English is seen as an alien language and its use is almost always inappropriate in the different social contexts.

Q 9. *If you hear people at the level of your department or elsewhere holding a conversation in English, what would you think of them?*	**%**
Intelligent	00.70%
Arrogant	15.49%
Diligent	40.14%
Self-confident	43.66%

Table 9. Students' Views of People Who Speak in English

Q 10. *Do you think that your English language teachers are competent enough to teach you EST (English for Science and Technology) in the most appropriate way? Justify your answer, please!*

Students' attitudes towards their teachers of English are of paramount importance for the success of L2/FL learning because the learners who hold a positive idea about their English teachers are rather active and much more involved in the learning process. Thus, the students participating in this research were asked to say whether they think that their English language teachers are competent enough to teach them EST (English for Science and Technology) in the most appropriate way. Surprisingly, only 33.80% of them asserted that their teachers of English are able to teach EST because, as students reported, they are skilled, experienced and knowledgeable. On the other hand, two thirds of students (66.19%) claimed that their English teachers are incompetent. In fact, students' justifications reflected the pethetic status and reputation of English teachers at the Algerian science faculties as it is confirmed in the works of Mebitil (2011; 2014). According to the informants, English teachers:

- cannot transfer the pieces of information to students properly.
- cannot motivate students. They do not teach all the lessons and they cannot present the lessons well.
- concentrate on English grammar rather than the English used in science and technology.
- are very young. They do not have enough knowledge of how to teach English to university students.
- do not master English well and they do not go abroad to study more.
- are not specialised in English for science and technology. They are rather specialised in literary English.
- cannot facilitate the pieces of information they provide so that students understand them.
- make various mistakes.
- speak in Standard Arabic and colloquial Arabic almost all the time.
- just teach English to get a salary and they do not care about students.
- do not know how to pronounce English well.
- do not know technical English
- do not show any interest in and knowledge of science.
- are not serious; they do not come.
- face difficulties in understanding complex scientific texts.
- do not have the means to teach science students efficiently.
- make the sessions very boring.
- keep teaching the very same lesson taught in middle and high schools.

The negative attitudes of Algerian science students towards their teachers of English may have detrimental effects on their attendance, seriousness and success in learning English. In order to explore this matter, the informants were required to comment on a number of statements. The data

obtained show that the majority of them (60.55) feel very enthusiastic to come to English classes. Moreover, 52.81% of them think that English classes are not very boring at all. Hence, the students claimed that when they miss English classes, they ask their classmates and teachers on what has been taught. However, half of the students (50.69%) reported that they only study English to pass the exams. This line of thought runs against the arguments they provided before on the vitality of English in their academic and professional lives. Furthermore, the majority of the respondents (80.68%) believe that reaching the proficiency of native speakers of English is not impossible. In fact, they feel able to reach a high mastery of English since 74.64% of them argued that it is not too late for them to learn English. They think that even at this age (students are in their twenties) they can learn English effectively. Table 15 below provides all the details related to the statements students commented on.

Q 11. *Please, comment on the following statements:*	***Strongly disagree***	***Disagree***	***Cannot say either***	***Agree***	***Strongly agree***
a) You always feel enthusiastic to come to class when the English language is being taught.	06.33%	23.23%	09.85%	38.02%	22.53%
b) English classes are very boring and traditional as the focus is always on grammar.	21.83%	30.98%	11.97%	23.23%	11.97%
c) When you miss English classes, you never ask your friends or English teacher on lessons.	25.35%	40.84%	05.63%	18.30%	09.85%
d) Honestly, you study English just to pass the exams.	24.64%	21.12%	03.52%	27.46%	23.23%
e) No matter what you do, you will never reach the proficiency of native speaker of English.	52.81%	27.87%	02.11%	08.45%	07.74%
f) It is too late to learn English (at this age you cannot learn English effectively).	40.84%	33.80%	02.11%	14.08%	09.15%

Table 10. Students' Attitudes towards English Classes

In brief, even though Algerian science students do not have a very high commend on the English language, they do hold a fairly positive attitude towards it. This, however, proves that the reason behind students' failure to learn English has nothing to do with their genuine attitudes towards it. Rather, it is the surrounding circumstances which push students directly or indirectly to neglect learning English. Indeed, students are very disappointed with their teachers of English who neither know scientific English nor use authentic materials and creative methods to teach it. In fact, some studies on needs analysis have already emphasised the importance of training English teachers in scientific English (Mebitil, 2011) and devoting a lot more time and resources to teach EST in Algeria (Dakhmouche, 2008; Ounis, 2005). However, these studies did not go deep in examining students' beliefs about the importance of English in their academic and professional lives. Arguably, it is rather pointless to devote more time, resources and energy to teach English to students who believe that they would never need it to succeed in their studies and professional lives.

Item 3. Students' Learning Practices of the English Language

This item tries to reveal how frequently students use English in their writing, speaking, reading and listening habits. The data evidently show that only few students use English on a frequent basis. The majority of them reported that they either never or rarely write, speak or read in English. However, listening to English programmes seems to be the most preferred activity for students as it is clearly indicated in the table below.

Q 12. *How often do you*	***Never***	***Rarely***	***Sometimes***	***Often***	***Always***
a) write essays, notes, diaries, etc. in English?	61.26 %	16.90 %	10.56%	06.33 %	04.92 %
b) speak with friends, strangers, etc. in English?	31.69 %	33.80 %	24.64%	07.04 %	02.81 %
c) read books, magazines, articles, etc. in English?	36.61 %	29.57 %	26.05%	04.92 %	02.81 %
d) listen to podcasts, clips, etc. in English?	10.56 %	18.30 %	28.87%	21.12 %	21.12 %

Table 11. Students' Frequency of Use of All English Language Skills

Once again, students' answers to questions 12 and 13 confirm that they are not consistent in their answers since although the majority of the informants asserted that they hardly use English, 78.87% of them said that they are working on improving their English proficiency. Moreover, when students were asked to tell what they do to improve their English, they provided a variety of answers which are clearly contradictory to the statistical details

displayed in the above table. In fact, students think that they are spending strenuous efforts to learn English whereas in reality what they do is by no means efficient or sufficient.

Q 13. *Do you work on improving your English language proficiency?*	
Yes	**No**
— I read some books and translate the words which I do not understand. — I try to have conversations with people in English. — I read articles and texts in English. — I use the internet to improve my English language. — I read articles, watch films and listen to music in English and when I do not understand I use a bilingual dictionary to get the point. — I attend private schools and use language programmes and software. — I take courses through the net to learn English. — I hold conversations in English on the social networks, and especially on Facebook. — I try to speak in English as much as possible. — I use an automatic translator like Google translator to learn English vocabulary. — I watch programmes and documentaries in English. — I read novels in English in the summer holidays.	— I do not have enough time. — My studies depend on the French language and not English (I study in French). — The language I like is French and not English. — I do not have the will to learn English. — I do not work well on improving my English because we always think that we cannot do that. — I do not like English. — I am trying to improve my level in French but not English because it is French that I need most in my studies. — I do not care.

Table 12. Students' Answers to Question 13

Item 4. Students' Views about the Position English Should Enjoy in Science Faculties

In this item, the respondents were asked to reveal their opinions on the future of English in the language policy of their faculties. This practice is so important because numerous studies have confirmed that in order for the educational system to succeed at all levels; students must have a voice in determining the linguistic landscape of their institutions (Gill, 2005; Hayton, and Paczuska, 2002; Owu-Ewie, 2006; Tollefson and Tsui, 2005; Zaaba et al.,

2010). With this in mind, students were required to comment on a number of statements. First, students were asked to state how strongly they think that English should be a basic criterion for taking up higher education in the future. In fact, this custom is widely followed in many non-English highly developed countries such as Japan. Put differently, in Japan, students must pass an examination to test their English knowledge and proficiency before they get enrolled in the university (Hoffer and Honna, 1999). This practice is very practical because it encourages students at middle and high schools to learn English well to get the admission to carry on their university courses. However, 52.10% of the students who participated in the study did not support this line of thought. Arguably, students' low support for using English as a main requirement for taking up higher education is due to their belief that only few would make it. Yet, when students were asked whether they think that English should be given priority over French in the Algerian science faculties, 86.61% of them agreed to some degree. This high percentage of English supporters brings to light the fact that although French is highly valued by all Algerians, be they specialists or laypersons, students are well-aware of the vital role English plays in their fields of specialisation. This idea is further strengthened in the students' agreement on using English as a means of teaching and learning in the different scientific domains in the foreseeable future. In actual fact, 71.82% of students believe that it is high time to start using English as a medium of instruction of, at least, some core subjects in their areas of study. Furthermore, 82.50% of students think that effective cooperation programmes should be encouraged with English-speaking universities more than any other ones. In fact, even if the best elite universities are in the English-speaking countries, Algeria keeps French universities as its major scientific partners as Slougui (2009) shows in the following table.

	2001		**2004**	
Rank	**Country**	**%**	**Country**	**%**
1	France	77,3	France	76,0
2	Germany	6,2	Germany	6,4
3	Italy	6,2	USA	4,8
4	Belgium	4,4	Italy	4,2
5	UK	4,0	UK	4,1
6	Canada	2,6	Belgium	3,7
7	Morocco	2,6	Spain	3,6
8	Spain	2,5	Greece	2,3
9	USA	2,4	Morocco	2,0
10	Switzerland	1,9	Tunisia	1,9
Number of international co-publications		265		324

Table 13. Algeria's Top 10 Scientific Partner Countries (All Disciplines in 2001 and 2004)

It is worth noting here that the neglect of English in Algeria is mainly caused by the elites' mistaken belief that French is quite enough to connect oneself with the rest of the world and be globally heard. The elite groups, more particularly, politicians and researchers, in ex-French colonies are very proficient users of French, but rarely do they correctly produce an English sentence. In this regard, NgugiwaThiong'o (1986) believes that colonialism in Africa is still clearly prevalent in peoples' ways of thinking and behaving since they cherish and intensively use the language of their colonial masters and woefully stigmatize the other languages no matter what their statuses are. In fact, language-related problems in the third world are not treated as a matter of urgency, thereby resulting in what is technically called '*Demagogical Avoidance*' which Bamgbose (1991:6) criticises in this passage:

> There is a general feeling that language problems are not urgent and hence solutions to them can wait. … Not only is avoidance of the language problem unjustified, the (analogous) attitude of making pronouncements that cannot be implemented is also a form of avoidance. The longer a solution to a language problem is delayed, the more difficult it will be eventually to solve it...

Table 14 below reviews all the statistical details of students' answers to question 13.

Q 14. *How much do you agree with the following assertions?*	***Strongly disagree***	***Disagree***	***Cannot say either***	***Agree***	***Strongly agree***
a) English proficiency should be a fundamental requirement to get access to higher education.	11.26%	40.84%	05.63%	33.09%	09.15%
b) In the foreseeable future, English should be considered much more important than French.	02.81%	04.92%	05.63%	40.14%	46.47%
c) English should be the language of instruction of some core subjects in your field of specialty.	07.04%	14.78%	06.33%	40.84%	30.98%
e) Effective cooperation programmes should be encouraged with English-	04.92%	03.52%	07.04%	32.39%	52.11%

speaking universities.					

Table 14. Students' Views about the Future of English in their Faculties

Q 15. *In your view, who should be blamed for science students' low proficiency in English? Please, justify your answer.*

As a final question, students were asked to state who they think should be blamed for science students' low proficiency in English. In response to this question, the respondents argued that the government, the students, the university and the society at large are all held to account for students' deficiency in English. The overwhelming majority of students argued that English is indeed stigmatised in Algeria and the government does not do anything but discourage the learning of English in the scientific realms. Moreover, students asserted that they themselves must be blamed for not trying hard enough to enhance their English proficiency. The informants confessed that they are not really autonomous learners since only rarely do they spend some efforts and time to improve their English language skills. They also argued that Algerians as a whole are not really interested in the learning of English as table 15 below shows.

	Algerian science students fail to learn English because
The government	• the government does not choose the right methods and approaches to teach English. • the government does not provide effective programmes to teach English at primary and secondary schools. • the educational system is weak and the same lessons keep recurring every year. • the government does not provide the means needed and the conditions required for teaching English successfully at all levels. • the government gives priority to French at all levels of education and, especially at higher education. • English is a foreign language in Algeria and the government does not attach adequate importance to improve its teaching and learning. • it is the effect of neo-colonialism and the francophone movement supporters who want French to prevail over all other languages in Algeria.
The university	• the universities hire less competent English teachers. • the universities do not have the means needed for teaching English. • the university courses of science and technology are in French which means that English has no role to play. • EST teachers are not qualified.

	• if the university gives English some importance and designs effective syllabi, students will have good command on English.
The students	• if students really want to learn English, they will try much harder to acquire it because what they receive in schools and universities is not enough. • students are not serious in learning English. • students neglect learning foreign languages. • students are only interested in passing examinations successfully. • students do not devote any time to learn English.
The society	• the society is the one which determines the dominating language. • everyone in our society neglects English; whereas French is seen as the language of civilization. • the society makes fan of those people who speak English. • if you speak in English outside, everybody will laugh at you. • the society does not make use of English and if someone uses it, people would think of him/her as an arrogant person.

Table 15. Students' Justifications to Question 15

Conclusion

The internationalization of higher education and the phenomenal dominance of English over the scientific and technological realms have sharpened the knowledge gap between the haves and have-nots. Indeed, scientists, academics, teachers and students who fail to develop proficiency in English face linguistic bias and marginalization in the world of academia, while English-speaking ones avoid the linguistic disadvantage with relative ease. Despite this, Algerian science students and teachers ignore the ABC of English. Therefore, their mobility is stifled and their free and immediate access to up-to-date knowledge is almost non-existent. Moreover, although Algerian language policymakers and scholars talk every now and then about the importance of improving students' literacy in English, French is still the dominant working language for the overwhelming majority of science faculties and English is still marginalized.

This study reveals that science students' low proficiency in English is not attributed to their attitudinal feelings because the majority of students hold a positive attitude towards English. This implies that the problem is not entirely in the students themselves but rather in the surrounding circumstances. Ultimately, this paper proposes a number of pedagogic recommendations:

1. Conscious-raising campaigns should be launched to raise the awareness of science students at all levels to the importance of developing a high proficiency in English. Indeed, there should be a drastic change in the

mind-sets of students who even though they know that proficiency in English is highly needed to get access to up-to-date scientific knowledge and survive in this digital world, they do absolutely nothing to learn it. Consequently, teachers are highly required to use and recommend materials written in English and parents should constantly encourage their kids at middle and secondary schools to spend much more efforts and energy to learn English.

2. In order to keep up with the linguistic demands of this globalised world, the Algerian language policymakers should introduce a number of initiatives to enhance science students' proficiency in English. This would include a drastic shift from using solely French into using English as a means of instruction of at least some core subjects.

3. In an internationalised higher education, encouraging the learning and use of English in all the scientific domains in Algeria is bound to have hugely tangible benefits in facilitating cooperation programmes and teacher-students exchanges with countries up and down the planet.

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Appendix

Students' Questionnaire

Dear students,

You are kindly invited to participate in this research work by filling up this questionnaire with utmost honesty. Please, tick off the right box (√) or provide a full statement when necessary.

Thank you very much indeed!

I- Students' Profile

1- Gender: Male ☐ Female ☐

2- Age: .....Years-old

II- Students' Perception of the Significance of English in the Scientific Realms

3- In your view, what is the language of science and technology of present-day era?

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- Please justify your answer.

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4. How much is English important to you to perform the following activities?	**Not important at all**	**Not very important**	**Important**	**Extremely important**
a) a) Communicating with people specialized	☐	☐	☐	☐

in your field of study from all over the world.				
b) Carrying on your post-graduate studies.				
c) Succeeding in your studies (doing homework, acquiring much more knowledge, etc.).				
d) Using the computer and surfing the internet.				
e) Moving upward in the social ladder.				
f) Getting a decent job.				
g) Watching TV/films and listening to music.				
h) Reading books and articles about your area of specialty.				

5- Which English language skill do you need most?

Listening Reading SpeakingWriting

- Please, justify your choice.

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6- Do you think that the low proficiency of science and technology students in English plays a key role in their academic failure, lack of innovation, resourcefulness, etc.?

Yes No

-Please, justify your standpoint.

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III- Students' Attitudes towards English

7- How much do you like	**Do not like it at all**	**Do not like**	**Cannot say either**	**Like it**	**Like it so much**
The English-speaking countries, culture, people and their ways of behaving?					
the English language?					

8- Studying English will have detrimental effects on your identity and culture.
Strongly agree ☐ Agree ☐ Cannot say either ☐ Disagree ☐
☐ ngly disagree

9- Regarding your English language proficiency, you feel:
Really satisfied ☐ Satisfied ☐ Do not care ☐ Unsatisfied ☐
☐ ly unsatisfied

10- What is your feeling about students, majoring in your field of specialty, who can speak English well?
You respect them ☐ You Envy them ☐ You do not care ☐

11- If you hear people at the level of your department or elsewhere holding a conversation in English, what would you think of them?
Intelligent ☐ Arrogant ☐ Diligent ☐ Self-confident ☐

12- Do you think that your English language teachers are competent enough to teach you EST (English for Science and Technology) in the most appropriate way?
Yes ☐ No ☐
- Justify your answer, please!
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13- Please, comment on the following statements:	***Strongly disagree***	***Disagree***	***Cannot say either***	***Agree***	***Strongly disagree***
a) You always feel enthusiastic to come to class when the English language is being taught.	☐	☐	☐	☐	☐
b) English classes are very boring and traditional as the focus is always on grammar.	☐	☐	☐	☐	☐
c) When you miss English classes, you never ask your friends or English teacher on lessons.	☐	☐	☐	☐	☐
d) Honestly, you study English just to pass the exams.	☐	☐	☐	☐	☐

e) No matter what you do, you will never reach the proficiency of native speaker of English.	☐	☐	☐	☐	☐
f) It is too late to learn English (at this age you cannot learn English effectively).	☐	☐	☐	☐	☐

IV- Students' Learning Practices of the English Language

14- How frequently do you	***Never***	***Rarely***	***Sometimes***	***Often***	***Always***
a) write essays, notes, diaries, etc. in English?	☐	☐	☐	☐	☐
b) speak with friends, strangers, etc. in English?	☐	☐	☐	☐	☐
c) read books, magazines, articles, etc. in English?	☐	☐	☐	☐	☐
d) listen to podcasts, clips, etc. in English?	☐	☐	☐	☐	☐

15- Do you work on improving your English proficiency?

Yes ☐ No ☐

- If 'Yes', what do you do? And if 'No', why not?

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V- Students' Views about the Position English Should Enjoy in Science Faculties

16- How much do you agree with the following assertions?	***Strongly disagree***	***Disagree***	***Cannot say either***	***Agree***	***Strongly disagree***
a) English proficiency should be a fundamental requirement to get access to higher education.	☐	☐	☐	☐	☐
b) In the foreseeable future, English should be considered much more important than French.	☐	☐	☐	☐	☐

c) English should be the language of instruction of some core subjects in your field of specialty.	☐	☐	☐	☐	☐
d) This and the next batches of students and teachers must be proficient users of English.	☐	☐	☐	☐	☐
e) Effective cooperation programmes should be encouraged with English-speaking universities.	☐	☐	☐	☐	☐

17- In your view, who should be blamed for science students' low proficiency in English?

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- Please, justify your answer.

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