LANGUAGE OF INSTRUCTION AND SCIENCE EDUCATION IN ALGERIA

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ABSTRACT

This study examines learners' Cognitive Academic Language Proficiency and Basic Interpersonal Communicative Skills in L2 in order to determine the accuracy level of French oral language proficiency and academic achievement of students in Medical Sciences (Tlemcen University). Adopting a few sociolinguistic research tools, the researcher has obtained some results confirming that students often lag behind in academic performance due to the delay in the development of Cognitive Academic Language Proficiency (CALP) and to the complexity of bilingual language acquisition despite their apparent language fluency which reflects their achievement in Basic Interpersonal Communication Skills interpreted as communicative success. Another important aim of this research was to analyze the effects of students' attitudes towards French.

KEYWORDS: Bilingualism, BICS, CALP, Code Switching & Language Attitudes

INTRODUCTION

Science education in Algeria is conducted in a complex bilingual environment, This complexity derives from the diglossic nature of the Arabic language – where different national dialects are used for informal purposes alongside Modern Standard Arabic, the language of literacy – and from the widespread use of the French language, reflecting the Algerian's colonial history and its growing dominance in the domains of science and technology in Algerian universities. Such a context raises many questions for educational policy and for science education in particular. Some important questions include:

- What should language-in Science education be adopted in Algeria?

- Should science be taught in Arabic or in French? Or both?

- If students learn science in the French language, what should the initial language of instruction be?

- If an instruction is begun in Modern standard Arabic, at what level should the transition to the French language be made?

- If science is taught in Arabic, what are the implications of the diglossic nature of Arabic for how to approach instruction?

Discussions about questions such as these have a long history in Algeria especially those dealing with the role of the French language and modern standard Arabic education. Discussions of the role of the French language have revolved around the tension between the importance of the language in gaining access to modern scientific ideas and technological innovations, and the importance of the use of Arabic as the language of literacy and as a basis for Arab cultural heritage, and symbol of national identity. In Algeria, the conflict was initiated with the implementation of the Arabisation policy in

education after independence, especially in higher education, each language operates as a medium of instruction, Modern standard Arabic for the law, economics, humanities, and French for medicine, sciences and technology.

OBJECTIVES OF THE STUDY

This research work aimed to determine the relationship between the French language proficiency and the academic performance of the medical sciences students of High Education in Algeria. Likewise, the study endeavored to analyze the impact of Basic interpersonal communication skills on the cognitive Academic language proficiency level and academic performance in French of the students in educational settings.

The purpose is to allow students to achieve a favorable level of foreign languages in a rich environment to prepare them for a globalized workplace and to affect scientific and technological progress. So, to what extent are students able to cope with French academic demands? What kind of language demands do students really need?

METHODS

To keep abreast with scientific developments, Algeria has adopted French as a first foreign language. In medical science studies, all new French and English words are used to express new concepts, techniques, and inventions that come into existence. However, French has brought to Arabic serious linguistic problems in Algeria represented by the expansion of new concepts and techniques for which no equivalents exist in Arabic.

In the present years, the policies of development in Algeria are based on industrialization and technology, tend to reinforce rather than to adjust language problems. In fact, most Algerians are aware that multilingualism serves as an 'open window' to the modern world and access to scientific knowledge while the Arabic language recovers cultural identity including religion and national integration.

Research conducted on bilingual education policy and practice have been Developed predominantly in Canada and the USA and with attention to the general academic achievement of students in bilingual settings. The formulation of the proposed research questions needs a large body of educational research addressing the challenges of bilingualism that exists in educational planning and policy in Algeria. Cummins' (1999) discussion of the relationship between research, theory, and policy in bilingual education is relevant here. He argues for the important role of theory in mediating between empirical research and policy Among the important theoretical principles that have been proposed to guide decision-making in bilingual settings have been the threshold hypothesis, the linguistic interdependence hypothesis, and the distinction between 'basic interpersonal communicative skills' (BICS) and 'cognitive/academic language proficiency'(CALP). Cummins (2002:23) has developed a number these hypotheses to clarify the relationship between bilingual proficiency and academic success or failure.

The threshold hypothesis have served as a basis for justifying the maintenance of student's L1alongside the development of an L2. Students must achieve proficiency of L1 during their education in order to avoid the cognitive deficit and to come up with difficulties in learning an L2 in a later stage. The linguistic interdependence hypothesis posits that there is between the development of a student's literacy skills in an L1 and L2 (Cummins, 1979a, 2000). A third theoretical insight from the bilingual education literature is the distinction between 'basic interpersonal communicative skills' (BICS) and 'cognitive/academic language proficiency' (CALP) (Cummins, 1979b, 2000). This distinction refers to two broadly distinct varieties of language use: the first, BICS, is richly embedded in context

where the comprehension of language is supported by cues from the situation of use such as non-verbal gestures and feedback from the interlocutor; the second, CALP, is "disembedded" from contextual support, and is often used for purposes that are cognitively more demanding.

The framework is applied to Algerian bilingual students in Medical Sciences; it is evident that those students, too, are more comfortable in BICS rather than CALP. Thus, BICS cannot be used as a measurement of actual academic performance without evaluating one's CALP. The data suggest the difference between conversational fluency and academic progress is the length of time required to catch up academic achievement in French. For instance, if we compare two students from the faculty of medicine, a first year student and a six-year, there are enormous differences in these students' ability to speak French, knowledge of vocabulary, phonology or basic fluency. The six-year student can understand everything that is said to him/ her in everyday social situations and he/she can use language effectively in these contexts, just as the 1 year student can. As compared to academic aspects, in second language acquisition contexts, a first year student manifests a long time period to acquire academic aspects of proficiency. So, learners must learn how to use their newly acquired language accurately and appropriately. Every year, students gain more sophisticated vocabulary to increase their literacy skills. Much of students' education in the early years is conducted in Arabic; native language instruction extends up until the end of the elementary years; if they learn the French language as a language in parallel with Arabic instruction in most school subjects much of what they learn may transfer to their French competence.

RESULTS AND DISCUSSIONS

This article presents an analysis of language proficiency and academic achievement. Our investigation was conducted on the Medical Sciences students in three faculties of Tlemcen University (Pharmacy, Dental Surgery and especially the Faculty of Medicine) to determine the level of acquisition of French academic proficiency in the 2012/2013 academic year. This research draws on data and theoretical results of a bilingual questionnaire, interviews, classroom observation and note- taking about students' speech performance, which allowed for the testing of language dominance along with the constructs of BICS and CALP. As already mentioned, our issue concerns the students' behavior and reactions towards French used as a medium of instruction in those scientific streams. The sample consists of 100 students observed over a three-month period (from January to March 2018).

We attempt to diagnose the language learning situation by paying more attention to the students' verbal repertoire and the main obstacles they complained about and strategies which they follow or simply adapt to overcome linguistic incompetence. The method attempts to explore, describe, predict and explain the results obtained in the study setting with the goal of finding some answers to the proposed hypotheses.

The questionnaire establishes on the basis of students proficiency assessment and behavioral measures of language performance. Both quantitative and qualitative methods will be used in this research work, but we emphasize more on the qualitative one. Our aim is to describe individual experiences and their cognitive academic language proficiency, to obtain specific information about the participants, to share their opinions and to see their behaviors in educational context. Thus, the questionnaire as a qualitative method, allows us to get more flexible information and to pave the way in our field-work to analyze the data.

Table 1: Students' Oral Competence in FRENCH

Academic Performance			
Very good	Good	Average	Weak
11	27	57	5

From this graph, the results show that students, of different proficiency levels, will encounter difficulties to formulate oral or written production. The smooth process of production is disrupted with more information leading to performance that is more complex; students try to find the alternative methods of expressing their meanings or using AA as a resource where normal communication can proceed.

What is attractive in the results is that the students have on the whole an average level of proficiency in productive skills while they seem to perform better in the perceptive skills.

The results confirm our hypothesis that the vast majority of students in Medical sciences show little confidence conducting an oral presentation in the French language, though they are quite proficient in productive skills, particularly speaking that is why they have difficulty confronting with the academic language demands in lectures.

Table 2: Students' Language Perception in Terms of Difficulty

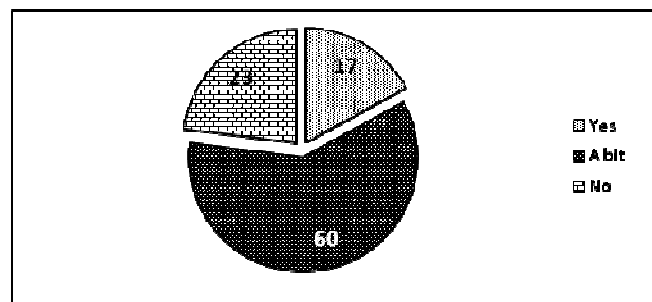|	Yes	A bit	No
Medical Sciences	17	60	23

Figure 1: Students' Difficulties in Pursuing Thier Studies in FRENCH

The table and the graph show that there are a considerable number of students in medical sciences who face language problems in their studies, which confirms their low skills in French and lack of academic language proficiency. This is due to their pre-university schooling in MSA with French studied just as a foreign language; obviously, this mismatch affects students' linguistic abilities in scientific fields which are undertaken in French. All students' past language experience has shaped the way they will behave linguistically today. They generally find difficulties in eliciting the information which has an impact on performance; in other words, the type of information has a strong influence, with concrete information being easier to handle with greater familiarity than abstract information which is associated with higher levels of accuracy and fluency and greater organization and structure in the task of performance.

In light of the research on bilingual education literature and science learning and teaching and the linguistic nature of the language situation in the Algerian universities can be tackled to form the starting point for a situated research on language in science education.

This discussion addresses the need of schooling to access and engage with scientific knowledge through both Arabic and the French language. This assumption may help to participate in science and technological fields that are

dominated by international languages mainly English and French and the importance of the use of Arabic to reinforce national and regional identity. The use of Arabic also addresses the equally pressing need to be engaged in science-related discussions and debates in the native language. This reasoning focuses on the use of the Arabic language as the main language of instruction in science until the later university years.

There are challenges to the applicability of this reasoning in Educational policy. In the Algerian context, student's BICS in their French language is not very well developed outside of the context of formal instruction and they are not able to cope with CALP inside universities. This implies that the challenge to instruction in French is likely to be even greater and this linguistic situation leads to suggesting a need for initial instruction in Arabic in the scientific domains.

Arabic diglossia raises the question as to what is to be treated as the native language given the diglossic nature of Arabic, how long does it take Arabic speaking students to develop CALP in Arabic and how does diglossia impact the development of CALP in Arabic? Answers to these questions are required to understand whether it is an advantage for students to receive most of their instruction in Arabic. Much research is certainly needed in this area, if we assume that students must graduate from initial schooling with the capacity to engage with science in both Arabic and French, the language of instruction requires some specific language skills will transfer from one language to another. This would achieve the desired bilingual competence.

CONCLUSIONS

Despite a complex Bilingualinguistic environment, science education is carried out in Algeria in the absence of research-based policies and recommended practices. The overall aim of this research work has been to draw attention to the complexity of Algerian bilingualism. From its reality in the Algerian society, language use differs from everyday conversational fluency to education that requires academic proficiency.

In considering issues of language allocation for science teaching in Algeria we need to develop our understanding in a number of areas. We need to develop an understanding of the time it takes students to develop CALP in a foreign language and in Arabic, in this particular linguistic context. It is important to understand how the fact that French is not the language of the community and that students' native language is a local dialect impact the development of CALP in the languages of instruction. Answering these questions provides a basis for more informed positions with regard to the roles the French language, MSA and the local dialect in instruction in the early years.

On the basis of the observation that French in the Algerian university context operates as a medium of instruction in scientific domains, with attention to the general academic achievement of students in bilingual settings, we have put forward the main hypothesis that in spite of the fact that the sample students chosen for investigation appear linguistically fluent, not only in lecture settings but also outside of the university, but only using BICS while they need to reach CALP proficiencies. One apparent reason for their language behavior is linked to the language applied to scientific streams.

This research is an attempt to describe that scientific language differs from everyday language use in certain linguistic features, those features used for expressing logical, scientific knowledge that make it formal and abstract and it is often seen as complex. Students' motivation to become more competent and proficient in the French language plays a significant role in their linguistic behavior.

The learners do not show enough proficiency in the French language because they are given the opportunity to express themselves using AA. This may appear to hamper the development of academic proficiency in the learning environment. In most cases these learners were unable to compose grammatically correct sentences, there was a lack of logic in their speaking and they fail to think creatively when faced with problems.

Cummins' theory, which lies in the distinction between communicative language proficiency and academic language proficiency, helps explain why it is difficult for L2 learners to cope with academic work. This distinction clarifies why students who appear to be proficient communicators are unable to cope with academic demands. The common underlying proficiency model helps illustrate the importance of adequate first language development to facilitate second language development.

Concerning the French language demands of the subject, a visible gap and weaknesses are already apparent when the pupil moves from primary to elementary and secondary levels. At the university level, students coming from Arabic medium classes without much exposure to French fail to cope with academic demands and obtain the bad academic achievement. In the context of the Algerians universities and from a pedagogical point of view, most of the research supports the view that teaching in Arabic is preferable.

The tension between the "realism" of acknowledging the need for access to science in an international language and the "dream" of an Arabized science education. In the absence of a relevant body of research, it is very important to begin to consider exactly what kind of research is needed to begin to address questions such as those listed above with particular reference to science education, with the assumption that the ability to engage with science in both Arabic and French is a desire of students in Algeria.

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