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## **MATHEMATICS AND THE LANGUAGE OF INSTRUCTION IN MOROCCO: ALTERNATING BETWEEN FRENCH AND ARABIC DURING THE LAST 60 YEARS**

**Summary:** Since the late 1950s, the language of instruction in mathematics in Morocco has undergone four major shifts between French and Arabic. Roughly every decade, a change occurred, and each shift faced significant challenges, including pedagogical issues, teacher training, textbook development, and sometimes political and ideological tensions. The most recent change, introduced in 2015, led to the creation of international baccalaureate tracks and marked the beginning of a new policy known as ‘linguistic alternation’. This policy allows certain subjects, particularly in the sciences, to be taught in foreign languages, namely French, English, and Spanish. Its adoption has sparked widespread debate in Moroccan society, drawing particularly strong criticism from conservative groups. This article first offers an overview of the various language policy changes in mathematics education, outlining their implementation strategies and the arguments behind them. It then explores the emergence of linguistic alternation and examines the controversies and public responses that have accompanied its introduction.

**Keywords:** Arabization, language of instruction, linguistic alternation, mathematics, teaching

### **Introduction**

Following its independence in 1956, Morocco inherited an education system marked by deep inequalities and colonial legacies. It featured multiple parallel tracks, separately designed for Europeans, rural populations, urban residents, and social elites. The system was elitist, predominantly staffed by foreigners, and

operated primarily in French<sup>1</sup> as the language of instruction<sup>2</sup>. In 1957, a royal commission tasked with reforming education proposed four guiding principles: unification, generalization, Moroccanization, and Arabization<sup>3</sup>. While the first three were gradually implemented over the following three decades, the Arabization of education, particularly in scientific subjects, faced persistent challenges and hesitation.

The language of instruction for scientific disciplines (mathematics, physics, and natural sciences<sup>4</sup>) has lacked long-term stability since independence<sup>5</sup>. Over the past 60 years, it has undergone multiple shifts, reflecting ongoing tensions between national identity and educational pragmatism. This period can be broadly divided into two main phases: the Arabization phase and the linguistic alternation phase. The first phase focused on Arabizing instruction, particularly in scientific disciplines, with the aim of establishing Arabic, the official language of the state, as the primary medium of instruction. In the second phase, the focus shifted from Arabization to the principle of linguistic alternation, which involves the use of multiple languages in the teaching of scientific subjects. This principle was initially introduced implicitly in the National Charter for Education and Training<sup>6</sup>

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<sup>1</sup> In fact, this concerns the part of Morocco occupied by France. But this structuring of education also applies to the northern part of Morocco, which was occupied by Spain, except that the dominant language there was Spanish. G. Schubring, *Mathematics teaching in the process of decolonization*, [in:] “Dig where you stand” 4. *Proceedings of the 4th International Conference on the History of Mathematics Education*, ed. by K. Bjarnadóttir, F. Furinghetti, M. Menghini, J. Prytz, G. Schubring, Edizioni Nuova Cultura, Rome 2017, p. 356-357.

<sup>2</sup> E. Laabid, *Teaching mathematics in Moroccan high school in the past fifty years*, [in:] “Dig where you stand” 5. *Proceedings of the 5th International Conference on the History of Mathematics Education*, ed. by K. Bjarnadóttir, F. Furinghetti, J. Krüger, J. Prytz, G. Schubring, H.J. Smid, Freudenthal Institute, Utrecht 2019, p. 251–255; M.D. Aqil, *Morocco: Multilingualism, Cultural Identity, and Mathematics Education, Post-French Protectorate, a Historical Perspective*, PhD dissertation, Columbia University, New York 2019, p. 55–64.

<sup>3</sup> Unification means the merging of the different types of education existing during the protectorate into a single type of public education; generalization means allowing all Moroccan children of school age to access school; Moroccanization implies that the teaching staff must be Moroccan; Arabization means that the Arabic language must be the main language of instruction.

<sup>4</sup> In this paper, I focus on mathematics; however, most of the information discussed also applies to the other two science subjects (physics–chemistry and the natural sciences).

<sup>5</sup> In fact, this change in the language of teaching mathematics after independence is not specific to Morocco but also concerns several African countries, and particularly the three Maghreb countries. G. Schubring, *Mathematics teaching in the process of decolonization*, p. 353–357.

<sup>6</sup> For more information about this charter, we refer to: E. Laabid, *Teaching mathematics in Moroccan high school in the past fifty years*, p. 247–248.

and was later articulated more explicitly in both the Strategic Vision<sup>7</sup> and the Education Framework Law<sup>8</sup>.

The earliest changes occurred in primary education, where the language of instruction in arithmetic oscillated between Arabic and French for over a decade (1957–1973). A subsequent shift, between 1980 and 1990, affected both primary and secondary education, during which mathematics instruction transitioned from French to Arabic. This period marked the height of the Arabization of scientific disciplines. The most recent change occurred in 2015 and concerned secondary education, where instruction in scientific subjects shifted from Arabic to a multilingual model incorporating Arabic, French, English, and Spanish.

While the initial Arabization efforts were generally accepted, viewed as a continuation of the independence movement, the 2015 reform triggered strong opposition, particularly from conservative segments of society. For these critics, the shift to multilingualism appeared to contradict the goal of extending Arabization into higher education.

### **Arabization implementation strategies**

#### ***Hesitation phase of Arabization (1957–1973)***

The language of instruction in mathematics lacked stability during the first decade following independence. According to some sources, the first attempt to Arabize mathematics began in 1957, but a return to French was necessary as early as 1958. A second Arabization effort at the primary level was launched in 1965; however, it lasted no more than three years due to challenges in extending Arabization to the middle school<sup>9</sup>. As a result, the process was halted and postponed. French was reintroduced for mathematics instruction, this time in reverse order, from the 5th year of primary school down to the 3rd year of primary school, as shown in Table 1.

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<sup>7</sup> The *Strategic Vision* is a report produced by the Higher Council for Education, Training and Scientific Research, under the title: ‘For a school of equity, quality and promotion: a strategic vision of the 2015–2030 reform’, published in 2014. This vision provides recommendations to the government to improve the field of education. In reality, the Strategic Vision is an update of the main provisions recommended by the charter.

<sup>8</sup> This law, developed by the government, aims to translate the provisions issued by the strategic vision into organic legal texts.

<sup>9</sup> According to information collected in a blog, ‘the main phases of Arabization of mathematics in the Moroccan education system’, [https://www.profpres.net/2019/07/blog-post\\_92.html](https://www.profpres.net/2019/07/blog-post_92.html) [accessed 15.07.2024], and supported by oral testimonies from people who completed their primary education during this time.

Table 1. Back-and-forth between Arabic and French for the teaching of mathematics in primary schools during the 1960s.

	Primary* 3	Primary 4	Primary 5
French to Arabic	1965–1966	1966–1967	1967–1968
Arabic to French	1972–1973	1971–1972	1970–1971

Source: [https://www.profpres.net/2019/07/blog-post\\_92.html](https://www.profpres.net/2019/07/blog-post_92.html) [accessed 15.07.2024].

\* It is at this level that French was introduced as the first foreign language.

This instability of the language of teaching mathematics during this period was commented on by al-Jabri (1986):

When popular pressure at the beginning of independence imposed a sort of “generalization” of education, this led to an automatic Arabization from the bottom up. But as the Arabization of primary education was completed – after several attempts – we found ourselves faced with a great dilemma: to continue the Arabization of science and mathematics in secondary education without having enough teachers [...] or return to bilingualism in primary school. After a year or two of hesitation, where students translated their knowledge of mathematics and science from Arabic into French in the [first class of middle school – E.L] observation class, it was finally decided [October 1970 – E.L]<sup>10</sup> to return to French to teach mathematics at the primary level.<sup>11</sup>

### ***Main phase of Arabization (1980–1990)***

Following this period of hesitation, the language of mathematics instruction entered a phase of relative stability (1973–1980). During this time, mathematics continued to be taught in French from the third year of primary school through to the end of higher education. In fact, this was a transitional period in which preparations were made for the full implementation of the Arabization process. This comprehensive Arabization effort eventually encompassed all three levels of education: primary, middle, and secondary school. It was implemented gradually in an ascending sequence, beginning with the third year of primary school in the 1980–1981 academic year and reaching the final year of secondary education by 1989–1990. Table 2 below shows the chronology of this execution.

<sup>10</sup> I remember that during the 1969–1970 school year, I was in the fourth year of primary school. The teacher informed us, in the middle of the year, that the following year (5th year of primary school), mathematics will be studied in French. He then made us do, in parallel with the normal course, which is taught in Arabic, exercises in translating vocabulary and reading and writing numbers in figures and letters, etc.

<sup>11</sup> M.A. Al-Jabri, *Adwāʿ alā mushkil at-taʿlīm bi l maghrib* [Lights on the problem of education in Morocco], Moroccan Publishing House, Casablanca, 1986, p. 90.

Table 2. The year in which the language of mathematics instruction changed from French to Arabic and the corresponding grade level.

	Primary school			Middle school			High school			
Year of change	1980–1981	1981–1982	1982–1983	1983–1984	1984–1985	1985–1986	1986–1987	1987–1988	1988–1989	1989–1990
Level concerned	3	4	5	1	2	3	4	1	2	3

### *Arabization methodology*

According to official documents issued during the Arabization process, two main approaches were considered. The first, known as *complete Arabization*, involved using Arabic for all components of mathematical instruction: symbols, sentences, formulas, and diagram labels. This method, adopted in some Middle Eastern countries, was ultimately rejected in the Moroccan context.

The second approach, referred to as mixed Arabization, was the one implemented. It involved writing explanatory content, such as connecting sentences, definitions, theorems, remarks, and comments, in Arabic, while retaining Latin and Greek alphabets for mathematical expressions, particularly formulas and the naming of mathematical objects. As a result, texts often combined right-to-left and left-to-right<sup>12</sup> writing within the same document. To justify the choice of this second approach, one of the official texts of this period states:

We decided to use Latin and Greek letters for symbolization in mathematics. [...] We do not believe that we have committed heresy [*bid'ā*] or that we have renounced Arabization. The language of instruction is indeed Arabic; symbols are a common property of all countries. These symbols were adopted because they have the possibility of establishing and unifying the scientific language at the international level. They are used in all countries, even in countries whose language does not derive from Latin such as Japanese, Chinese, and Russian.<sup>13</sup>

Prior to the statement cited above, the document outlines several reasons for choosing the Latin and Greek alphabets over the Arabic script. It emphasizes specific linguistic and structural limitations of Arabic that hinder the effective symbolic representation required in mathematics.

The first difficulty stems from the fact that Arabic has only a cursive writing system, in which letters are connected. Attempting to render Arabic in a non-cur-

<sup>12</sup> Abdeljaouad refers to this way of presenting mathematical texts as 'bilaterality'. M. Abdeljaouad, *La bilatéralité dans le discours mathématique* [The bilaterality in mathematical discourse], "Petit x" 2004, no. 64, p. 36–59. For examples illustrating this bilaterality, see G. Schubring, *Mathematics teaching in the process of decolonization*, p. 355.

<sup>13</sup> Ministry of National Education (MEN), *Ta'rib tadrīs ar-riyyadiāt fi as-silk al 'awal* [Arabization of teaching mathematics in middle school], Librairie al-maārif, Rabat 1986 (1st ed. 1983), p. 70.

sive, letter-separated format poses educational challenges not encountered with Latin-based scripts. This makes Arabic less practical for mathematical symbolization.

The second issue is the absence of a distinction between uppercase and lowercase letters in Arabic, unlike Latin and Greek alphabets. The availability of a wider range of distinguishable characters in the latter alphabets allows for clearer and more flexible formulation of mathematical expressions.

The third challenge involves mathematical symbols such as  $\in$ ,  $\subset$ , and  $\int$ , which are designed to be used in left-to-right writing systems. Incorporating these symbols into right-to-left Arabic text can, over time, lead to difficulties in communication and information exchange on an international level<sup>14</sup>.

Beyond these linguistic challenges, the document also cites additional advantages of using the Latin and Greek alphabets and left-to-right writing for mathematics. It makes the following observation regarding the methodological choice for Arabizing scientific disciplines:

Our motivation in this is to follow scientific progress in the most efficient way possible. If in Morocco we adopt international symbols to designate conventional mathematical concepts and objects such as  $\log$ ,  $\text{tg}$ ,  $\cos$ ,  $\sin$  and the writing of mathematical sentences from left to right with Latin letters, Greek letters and specific symbols, we are sure that this methodology will encourage our pupils and students to consult foreign references and will also help them to access higher education in good conditions in Morocco and or in other developed countries.<sup>15</sup>

Additional arguments in favour of using Latin and Greek alphabets relate to the growing influence of technology in everyday life. Devices such as calculators and digital clocks increasingly condition users to read numbers from left to right. Furthermore, calculator keypads commonly feature mathematical functions such as  $\text{tg}$ ,  $\cos$ ,  $\sin$ , and  $\log$ . To use these tools effectively, students must become familiar with these standard notations. The document also expresses skepticism that, in the near future, the Arab world will be able to produce calculators adapted to Arabic script and right-to-left orientation<sup>16</sup>.

#### *Note*

Mathematical expressions are typically written using Latin characters but read and interpreted in Arabic. For instance, in the expressions  $\sin x$ ,  $\cos x$ , or  $a^n$ , the terms ‘sine’, ‘cosine’, and ‘power’ are translated into Arabic, while the variables ( $x$ ,  $a$ ,  $n$ ) are pronounced in French. Similarly, in an expression like  $\lim_{x \rightarrow a} f(x)$ , the symbols ( $f$ ,  $x$ ,  $a$ ) are stated in French, whereas the rest of the phrase ‘*the limit of  $f$  of  $x$  when  $x$  tends to  $a$* ’ is expressed in Arabic.

<sup>14</sup> Ibidem, p. 68–69.

<sup>15</sup> Ibidem, p. 69.

<sup>16</sup> Ibidem.

### ***Support system for the Arabization process***

There appeared to be no intention to Arabize higher education. Scientific disciplines, including mathematics, continued to be taught in French at the university level, even though they had been Arabized in secondary education. To bridge this gap, a support system was developed in secondary education to facilitate the transition of Arabized baccalaureate holders into French-speaking higher education, particularly in scientific and technical fields. This system seems to have been established for two main reasons. The first goal of this system was to prevent a reversion to French instruction, as had occurred during one of the Arabization attempts in the 1960s. The second was to support students in managing the linguistic transition from Arabic to French, particularly in preparation for higher education. In this sense, the system aimed to equip secondary school students with the ability to independently navigate the shift in the language of instruction. Furthermore, this support structure consisted of three components: the production of glossaries, the establishment of translation sessions, and the reinforcement of French language instruction in certain highly selective programs.

#### **a) Production of glossaries**

These glossaries were designed to support both directions of language transition from French to Arabic and from Arabic to French. They appeared in several forms, including stand-alone booklets, appendices in textbooks, or embedded boxes within the main text as supplemental information. In Arabic-language mathematics textbooks, for example, chapter and section titles were often presented in both Arabic and French. Textboxes would include key mathematical terms in Arabic alongside their French equivalents, and a comprehensive glossary was typically provided at the end of the book.

This approach likely served a dual purpose: it facilitated instruction for teachers who had been trained in French and helped students gradually develop a mathematical vocabulary in French. This vocabulary was beneficial in the short term for translation sessions and, more importantly, in the long term for succeeding in higher education, particularly for students wishing to pursue scientific studies after the baccalaureate level.

#### **b) Setting up translation sessions**

The objective of the translation sessions was to have students apply their knowledge of Arabic to understand and translate mathematical texts presented in French. This likely anticipates the type of work that students pursuing higher education in French will need to undertake. Thus, a translation session is provided as an activity conducted in French. Students are then required to translate mathematical texts written in French into Arabic. If the text includes an exercise, students must not only translate it but also solve the exercise in French. The translation activity is conducted either by the mathematics teacher, who devotes one

hour per week to it, or by a teacher specifically trained for this task, referred to as a translation teacher<sup>17</sup>. This teacher is responsible for translation activities across three subjects (mathematics, physics-chemistry, and natural sciences), dedicating one hour per week to each discipline. Additionally, this activity is assessed and graded, which demonstrates the importance attributed to it within the students' curriculum.

### **c) Strengthening the teaching of French (Highly selective courses)**

In fact, sectors referred to as highly selective courses have been established. Admission to these courses is conditional upon achieving strong academic results in middle school. The number of hours dedicated to French in these courses is greater than in ordinary programs. Essentially, this system prepares high-achieving students to pursue higher education in French with confidence.

## ***Conclusion***

This support system likely contributed to the relative stability of the language of mathematics instruction over a 25-year period (1990–2015), during which mathematics was taught in Arabic until the end of secondary school (baccalaureate level), and then in French at the higher education level. However, this stability was only superficial. It did not prevent the 'Higher Council for Education, Training and Scientific Research' from noting in one of its reports<sup>18</sup> that students in scientific fields face difficulties. The Council attributes these challenges to the language gap between Arabic, used in secondary education, and French, used in higher education for scientific subjects, and emphasizes that this language discontinuity is the primary cause of the difficulties encountered by science students.

The report also states that this issue is, in fact, a consequence of weak language skills and their impact on learning at various stages of education. It further points out that the linguistic choices remain imprecise; the language planning, which determines the role of each language in the education system, whether as a language of instruction or as a language taught, is insufficiently defined. From this perspective, the linguistic inconsistency that characterizes the education and training system calls for a reconsideration of the country's linguistic policy.

Indeed, with the aim of clarifying this policy, the languages of instruction and the teaching of foreign languages have been topics of discussion within bodies

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<sup>17</sup> These are middle school teachers (mathematics, physics-chemistry, or natural sciences) who, after two years of training at the ENS, become translation teachers (thus promoted to the rank of high school teacher).

<sup>18</sup> Higher Council for Education, Training and Scientific Research, *The national education and training charter; 2000–2013: achievements, obstacles and challenges*, December 2014, p. 21, [www.csefrs.ma](http://www.csefrs.ma) [accessed 31.07.2024]. This report was, in fact, as its title indicates, an evaluation of the implementation of the recommendations advocated by the charter more than ten years ago.

responsible for educational matters. The linguistic question has been present in documents developed by these bodies over the past two decades. This is particularly evident in the National Charter for Education and Training in 1999, the Strategic Vision (2015–2030), and the Education Framework Law adopted in 2019.

These discussions have led to the emergence of the principle of linguistic alternation. This principle, to some extent, connects the issue of Arabization with the broader challenge of teaching foreign languages and their use in scientific education. Further details on linguistic alternation are provided in the following section.

## **The principle of linguistic alternation**

### ***Emergence of the principle of linguistic alternation***

This principle was implicitly initiated by the Charter (1999) in one of the sections relating to the lever entitled ‘Improving the teaching of the Arabic language, perfecting foreign languages and opening up to Amazigh’. In these sections, the Charter discusses the organization and regulation of the languages of instruction in the education system. Then, it devoted a subsection entitled ‘Diversification of the languages of science and technology teaching’. In this section, the Charter made three recommendations concerning the languages of science teaching, as follows:

Gradually, during the national decade of education and training, optional courses in scientific, technical, and pedagogical education will be opened at the university level in the Arabic language, alongside the availability of good references and competent trainers. At the level of higher education, we will open highly specialized optional courses with a vision of research and training in the most useful foreign language in terms of academic production and ease of communication. As part of this approach, and in order to establish good and effective bridges between secondary education and higher education, based on a healthy and effective educational orientation, and in order to ensure the best chances of academic and professional success for learners. The most specialized scientific and technical units and modules of the baccalaureate program will be taught in the language used in higher education for the teaching of the specialties towards which the students will be oriented.<sup>19</sup>

Then, the first recommendation encourages the opening of courses in Arabic in the scientific and technical fields of university education. The second one instigates the opening of highly specialized courses at the university in the most useful and productive foreign language<sup>20</sup>. The third one stipulates that high school

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<sup>19</sup> Special Commission on Education and Training, *La charte nationale pour l'éducation et la formation* [The national charter for education and formation], 1999, no. 114, [www.uiz.ac.ma](http://www.uiz.ac.ma) [accessed 15.07.2024].

<sup>20</sup> The charter did not specify which language is the most useful. In the Moroccan context, it can

teaching of the most specialized disciplines will be provided in the languages used in the corresponding courses at university.

These three recommendations are summarized by the president of the commission, which developed the charter, in these terms:

In order to provide high-level scientific and technological options in the Arabic language and in the most promising languages in the various fields of knowledge at the higher education stage, a vigorous effort must be made. In keeping with this orientation, high school education in the most specialized disciplines will be taught in the languages used in the corresponding courses at the university.<sup>21</sup>

The charter did not explicitly mention linguistic alternation, although it underlies the three recommendations. But it was taken up and explained by the Strategic Vision (2015–2030) in 2014 and by the Framework Law relating to education adopted in 2019.

Furthermore, the principle of linguistic alternation has been defined by the Strategic Vision, in Appendix 2, as one of the key words of the vision in these terms:

The linguistic alternation is an educational option and pedagogical mechanism that invests in dual or multilingual education, aiming to diversify the languages of instruction and improve academic achievement therein. This is achieved by teaching some content or modules in certain disciplines in a foreign language.<sup>22</sup>

But the principle is also mentioned in some provisions of the thirteenth lever entitled ‘proficiency of the languages taught and diversification of the languages of instruction’, where it must be implemented. One can read:

Arabic is the primary language of instruction. The principle of language alternation is being implemented gradually: certain content or components will be taught in French in the short term in the secondary education, in the medium term in the preparatory education, and in English in the medium term in the secondary education. [...] Diversify the languages of instruction, especially by adopting a language of alternation to

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be French or English. It can be French to the extent that it allows us to preserve historical, cultural, and political relations with one of Morocco’s great allies. It can also be English to the extent that this allows Morocco to open global perspectives and major economic issues. A. Najih, *At-takhtit al-lughawi al-madrasi: tadrīs al-‘ulūm bayna al-lughāt al-‘um wa al-lughāt al-ajnabiyya* [School Language Planning: Teaching Science Between Mother Tongues and Foreign Languages], “Majalāt taḥawwōlāt mo‘āšira” 2019, no. 6, p. 28–29.

<sup>21</sup> A.M. Belafkih, *La charte nationale d’éducation-formation: Une ambition pour l’école au Maroc* [The national charter of education-training: An ambition for the school in Morocco], “Revue Internationale de l’éducation de Sèvres” 2000, no. 27, p. 83.

<sup>22</sup> Higher Council for Education, Training and Scientific Research, *For a school of equity, quality, and promotion: a strategic vision of the 2015–2030 reform*, 2014, p. 81, [www.csefrs.ma](http://www.csefrs.ma) [accessed 31.07.2024].

strengthen learners' language proficiency, and by proposing ways of harmonizing the languages of instruction between the various levels of education and training.<sup>23</sup>

In fact, the formulation of the Strategic Vision for the principle of linguistic alternation is the result of a compromise within the Higher Council for Education and Training and Scientific Research. The latter, after extended discussions, at the time of the development of the strategic vision, resulted in an agreement concerning the principle of linguistic alternation, which was then explained as being 'the possibility of teaching certain modules or contents in foreign languages'<sup>24</sup>.

Finally, the Framework Law defines the principle of linguistic alternation in Article 2, as one of the basic terms for the law and its implementing decrees. Then, the Framework Law stipulates that linguistic alternation is:

A pedagogical approach and progressive educational choice which invests in multilingual education, with the aim of diversifying the languages of instruction alongside the two official languages of the State, and this by teaching certain subjects, particularly scientific and technical subjects, or certain contents or modules in certain subjects in one or more foreign languages.<sup>25</sup>

This document emphasizes the diversification of teaching languages in connection with the principle of linguistic alternation. It details the topic at hand as follows:

It adopts Arabic as the primary language of instruction and develops the status of the Amazigh language in schools, within a clear national framework and in accordance with the provisions of the Constitution, as the official language of the State and the common heritage of all Moroccans without exception. Establishing progressive and balanced linguistic pluralism aims at enabling high school graduates to master both Arabic and Amazigh, and to master at least two foreign languages.<sup>26</sup>

It should be noted that all three documents recall that Arabic remains the primary language of instruction. The latter should be enriched by other languages. Thus, the process of designing and implementing linguistic diversification in the Moroccan education system leads to the emergence of the principle of linguistic alternation.

### ***Reactions provoked by Linguistic Alternation***

The Arabization process, initiated in the early 1980s, has not been openly criticized and is generally viewed as a natural extension of the post-independence movement. However, it was during the discussions surrounding the Education Framework Law that the debate on languages of instruction of scientific subjects

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<sup>23</sup> Ibidem, p. 37–38.

<sup>24</sup> M. Jali, *Jadal lughati at-tadrīs bi l maghrib* [Controversy over the language of instruction in Morocco], "Majallat al-Furqān" 2019, no. 84, p. 54.

<sup>25</sup> *The Framework Law relating to the education, training and scientific research system (2019)*, "Official Bulletin" no. 6805, 19 August 2019, www.sgg.gov.ma [accessed 30.07.2024], art. 2.

<sup>26</sup> Ibidem, art. 31.

was reignited. This brought the issue of the language of instruction (Arabic or French) back to the forefront, after nearly 30 years of Arabization in scientific disciplines at the primary and secondary levels. The debate revealed a deep divide between two opposing perspectives: on one side, the defenders of the Arabic language, and on the other, the advocates of multilingualism.

Defenders of the Arabic language view the principle of linguistic alternation as a form of abandonment of Arabic and tend to frame the debate at ideological and political levels<sup>27</sup>. For them, the language of instruction is considered one of the nation's fundamental constants and a pillar of national sovereignty. In contrast, advocates of multilingualism emphasize the pragmatic dimension of this principle. They argue that it enriches the education system by offering Moroccan students the opportunity to learn scientific subjects in multiple languages. In this view, language is treated primarily as a communication tool and approached from a utilitarian perspective<sup>28</sup>.

### Arguments of the advocates of multilingualism

The main arguments put forward by proponents of linguistic alternation can be summarized as follows: As Morocco seeks to strengthen its ties with French-speaking African countries, maintaining the use of French in education facilitates student and teacher mobility, thereby promoting cultural and scientific exchange. Moreover, foreign languages are seen as the primary languages of science and are considered better suited for the teaching of scientific and technical disciplines. According to this perspective, the teaching of scientific subjects in Arabic is one of the reasons for the decline and failure of the education system in Morocco<sup>29</sup>. Furthermore, teaching scientific disciplines in a foreign language is perceived as a means of promoting fairness and equal opportunity among citizens. This refers to the reality that children from influential families, who often attend international or private schools, tend

<sup>27</sup> For example, the titles of the following references demonstrate this trend. M. El Hilali, *Lughat tadrīs al'loum bayna at-ta'sil ad-dostouri wa tabrīr al-bidaghōjī* [The language of teaching science between constitutional rooting and pedagogical justification], "Majallat taḥawwōlāt mocāšira" 2019, no. 6, p. 6–15; H. El Kabbaj, *Kifāh watānī min ajli lughat at-ta'līm: Tārīkh al ma'raka bayna at-Ta'rib wa al farnasa fi l maghrib min 1920 ilā 2019* [A national struggle for the language of education: a history of the battle between Arabization and French in Morocco from 1920 to 2019], Manshūrāt bel 'arbi Alaoui, Rabat 2019; D. Jandari, *At-Tanawob al-lughawi wa l'adat intāj an-nasaq al frankofounī: qirā'a fi l khalfiyyāt al idioloujīyya* [Linguistic alternation and reproduction of the Francophone system: A reading in ideological backgrounds], "Majallat al-Furqān" 2019, no. 84, p. 47–50.

<sup>28</sup> M. El Hilali, *Lughat tadrīs al'loum bayna at-ta'sil ad-dostouri wa tabrīr al-bidaghōjī*, p. 8.

<sup>29</sup> Defenders of the Arabic language reject this argument by considering that the causes of the difficulties experienced by the education system are hesitation, confusion, and improvisation caused by linguistic policy, not the Arabic language. M. Jali, *Jadal lughati at-tadrīs bi l maghrib* [Controversy over the language of instruction in Morocco], "Majallat al-Furqān" 2019, no. 84, p. 53.

to have strong foreign language skills, while children in public schools frequently struggle with foreign languages. Finally, the advocates of multilingualism consider that the language of instruction is secondary and that those who are interested in it aim to hide the real problems of education and their main causes.

### **Arguments of the opponents of multilingualism**

The arguments of opponents of the principle of linguistic alternation can be classified into two main categories: constitutional legitimacy and French-speaking influence. As for constitutional legitimacy, it is based on the fact that the position of the Moroccan constitution regarding the Arabic language and foreign languages is clear. Regarding the Arabic language, the constitution states that Arabic is the official language of the state. The latter must protect it, improve it, and develop its use<sup>30</sup>. Thus, the Framework Law is not in conformity with the constitution to the extent that it deprives Arabic of one of these constitutional functions, ‘science teaching’<sup>31</sup>.

The constitution is also interested in foreign languages, and its position on them is clear and precise. Foreign languages are considered communication tools that facilitate openness to other cultures and civilizations. The constitution states:

The state ensures national linguistic and cultural coherence, and the learning and perfection of the most used foreign languages in the world, considering them as tools of communication, also the involvement and interaction with society’s knowledge, and openness to diverse cultures and contemporary civilization.<sup>32</sup>

When it comes to French-speaking influence, there is an ongoing struggle between Arabic and French. Defenders of Arabic argue that the language is a victim of the former colonial language, which continues to dominate key sectors of public life, such as media, the economy, education, and administration. On the other hand, proponents of French actively lobby to promote the language for political, cultural, and economic reasons, framing their efforts as part of educational reform and job creation.

This push is supported by an alliance between the Francophone current, which represents French interests, and a group of technocrats who, leveraging their field experience, endorse and promote the agenda of the Francophone bloc. In reality, the adoption of French as a language of instruction is not merely an educational or transitional choice, but rather a strategic cultural investment

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<sup>30</sup> *The Constitution of the Kingdom of Morocco 2011*, art. 25, “Official Bulletin” no. 5964 bis, 30 July 2011, [www.sgg.gov.ma](http://www.sgg.gov.ma) [accessed 15.08.2024].

<sup>31</sup> More details can be seen in: M. El Hilali, *Lughat tadrīs al-ʿloum bayna at-taʿsil ad-dostouri wa tabrīr al-bidaghouti*, p. 6–15.

<sup>32</sup> *The Constitution of the Kingdom of Morocco 2011*, art. 26.

by France, one whose returns may surpass those of traditional industrial investments<sup>33</sup>.

### Conclusion

The issue of teaching scientific disciplines remains unresolved, and the debate surrounding it is still ongoing. The ambiguity has been further reinforced by the adoption of the Education Framework Law, which introduced the principle of linguistic alternation. This principle allows for multilingualism, enabling the use of foreign languages in the teaching of certain specific content areas.

Supporters of multilingualism emphasize the pragmatic nature of this approach, arguing that it provides Moroccan students with the opportunity to learn scientific subjects in multiple languages, an asset to the national education system. Their focus is not on ideological or political considerations, but rather on practicality, efficiency, and educational outcomes.

In contrast, opponents of this approach view multilingualism as a pretext for abandoning the Arabic language. They frame the debate in ideological and political terms, asserting that Arabization in higher education represents a form of cultural independence from the former colonial power. To support their position, they appeal to the historical, religious, and political legitimacy of the Arabic language.

### Bibliography

- The Constitution of the Kingdom of Morocco 2011*, “Official Bulletin” no. 5964 bis, 30 July 2011, [www.sgg.gov.ma](http://www.sgg.gov.ma) [accessed 15.08.2024].
- The Framework Law relating to the education, training and scientific research system (2019)*, “Official Bulletin” no. 6805, 19 August 2019, [www.sgg.gov.ma](http://www.sgg.gov.ma) [accessed 30.07.2024].
- Abdeljaouad Mahdi, *La bilatéralité dans le discours mathématique*, “Petit x” 2004, no. 64, p. 36–59.
- Al-Jabri Mohamed Abed, *Aḍwāʿ alā mushkil at-taʿlim bi l maghrib*, Moroccan Publishing House, Casablanca, 1986.
- Aqil Moulay Driss, *Morocco: Multilingualism, Cultural Identity, and Mathematics Education, Post-French Protectorate, a Historical Perspective*, PhD dissertation, Columbia University, New York 2019.
- Belafkih Meziane Abdelaziz, *La charte nationale d’éducation-formation: une ambition pour l’école au Maroc*, “Revue Internationale de l’éducation de Sèvres” 2000, no. 27, p. 76–87.
- El Hilali Mohamed, *Lughat tadrīs alʿloum bayna at-taʿsil ad-dostourī wa tabrīr al-bidaghoutī*, “Majallat taḥawwolāt moʿāšira” 2019, no. 6, p. 6–15.

<sup>33</sup> More details can be seen in: D. Jandari, *At-Tanawob al-lughawi wa Fadat intāj an-nasaq al frankofounī: qirāʿa fī l khalfiyāt al idioloujiyya*.

- El Kabbaj Hammad, *Kifâh watanî min ajli lughat at-ta'lim: Târikh al ma'raka bayna at-Ta'rib wa al farnasa fi l maghrib min 1920 ilâ 2019*, Manshûrât bel 'arbi Alaoui, Rabat 2019.
- Higher Council for Education, Training and Scientific Research, *For a school of equity, quality, and promotion: a strategic vision of the 2015–2030 reform*, 2014, www.cse-frs.ma [accessed 10.08.2024].
- Higher Council for Education, Training and Scientific Research, *The national education and training charter, 2000–2013: achievements, obstacles and challenges*, December 2014, www.csefrs.ma [accessed 31.07.2024].
- Jali Mostapha, *Jadal lughati at-tadris bi l maghrib*, “Majallat al-Furqân” 2019, no. 84, p. 51–57.
- Jandari Driss, *At-Tanawob al-lughawi wa l'adat intâj an-nasaq al frankofouni: qirâ'a fi l khalfiyyât al idioloujiyya*, “Majallat al-Furqân” 2019, no. 84, p. 47–50.
- Laabid Ezzaim, *Teaching mathematics in Moroccan high school in the past fifty years, “Dig where you stand” 5. Proceedings of the 5th International Conference on the History of Mathematics Education*, ed. by K. Bjarnadóttir, F. Furinghetti, J. Krüger, J. Prytz, G. Schubring, H.J. Smid, Freudenthal Institute, Utrecht 2019, p. 239–256.
- Ministry of National Education (MEN), *Ta'rib tadrîs ar-riyyadiât fi as-silk al 'awal*, Librairie al-maârif, Rabat 1986.
- Najih Abderrahim, *At-takhtit al-lughawi al-madrasî: tadrîs al 'ulûm bayna al-lughât al'um wa al-lughât al ajnabiyya*, “Majallat taḥawwolat mo'âsira” 2019, no. 6, p. 25–36.
- Schubring Gert, *Mathematics teaching in the process of decolonization, “Dig where you stand” 4. Proceedings of the 4th International Conference on the History of Mathematics Education*, ed. by K. Bjarnadóttir, F. Furinghetti, M. Menghini, J. Prytz, G. Schubring, Edizioni Nuova Cultura, Rome 2017, p. 349–367.
- Special Commission on Education and Training, *La charte nationale pour l'éducation et la formation*, 1999, no. 114, www.uiz.ac.ma [accessed 15.07.2024].

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