



Preliminary Considerations on the Development of a Bicultural Trilingual Education Model for Deaf Children in the Tunisian Context

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Deaf educational methods have been the subject of controversy among advocates of the oralist and the bilingual approaches for centuries. Over the past decades, the bilingual-bicultural method has proved its effectiveness in facilitating formal school learning and downscaling a higher rate of illiteracy compared to the hearing population. The bilingual-bicultural model in Western countries is designed and implemented in predominantly monolingual contexts or multilingual contexts with a dominant majority language. It aims at providing deaf learners with a simultaneous dual access to the deaf and hearing cultures through sign language and the written form of the majority spoken language. The objective of this dual access is to create a balanced form of bilingualism which will reinforce literacy development. In the Western context, the relative proximity of the written and spoken forms of the majority language allows the written form to function as a means of access to the socio-cultural heritage of the hearing community and to develop a sufficient degree of autonomy in a world where literacy became crucial. The application of the Western bilingual-bicultural model may at first glance seem tempting to mitigate a significant rate of illiteracy affecting 98% of the deaf Tunisian population. However, the diglossic situation in Tunisia, and in the Maghreb countries in general, rests upon the existence of two linguistic forms exhibiting considerable linguistic differences. On one hand, the Tunisian Dialectal Arabic (TDA) is the spoken form, and is the vehicle for the Tunisian socio-cultural heritage transmission. On the other hand, the written form, Modern Standard Arabic (AMS), assumes the role of institutional and literacy language. This particular situation requires a specific educational framework different from the classical bilingual-bicultural approach. We hypothesize that without taking into account Tunisian Dialectal Arabic, learners will not access the Tunisian hearing culture. This situation will potentially hinder literacy development in Modern Standard Arabic. Our article puts forward a trilingual-bicultural educational model adapted to the Tunisian diglossic situation. It includes TSL, and written ADT, as representatives of the deaf and hearing cultures which will both contribute to a more fluid development in a third language, written MSA, as the literacy language.

Keywords: trilingual-bicultural model, bilingual-bicultural education, Tunisian diglossic context, Tunisian Sign Language, Tunisian dialectal Arabic, modern standard Arabic (MSA)

1 INTRODUCTION

D/deaf literacy¹ development research stresses the significance of developing adequate language skills in the written form to foster deaf integration into the educational and professional spheres (Musselman, 2000). Even if most deaf children succeed in developing functional communicative skills in sign language (SL), their social integration remains challenging due to the absence or lack of skills in the spoken modality. In these cases, literacy endorses a crucial role as the main portal of access to culture, education, and employment. Despite the crucial role of literacy as a main gateway for integration, the alarming illiteracy rates within deaf communities all over the world bears witness to the inadequacies of educational solutions and models aiming at deaf literacy development.

This very same social integration is even more complicated for deaf children in the Arab speaking context. The diglossic situation imposes a different path of linguistic development as well as different linguistic requirements for social integration. The existence of two languages in two different modalities, each fulfilling distinctive functions, makes it difficult for deaf children to access culture, education, and employment through the intermediacy of the literacy language only. This situation further contributes to higher illiteracy rates.

This article will first provide an overview of the deaf illiteracy situation in different contexts. Second, approaches to deaf literacy development will be discussed in terms of their theoretical backgrounds, pedagogic implications, and limitations. Third, an assessment of the applicability of the bilingual-bicultural approach implemented in terms of sociolinguistic pertinence to the Tunisian context will be presented. Finally, a more sociolinguistically sensitive trilingual-bicultural model will be proposed, drawing

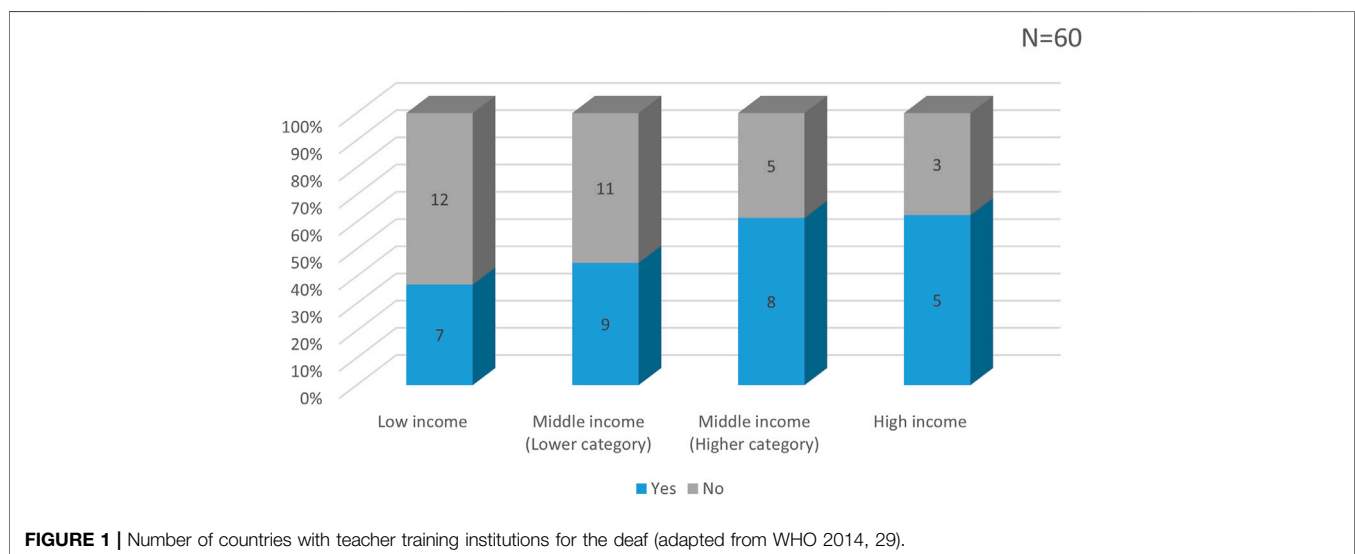
from the bilingual-bicultural model's theoretical premises, and extending its binary linguistic conceptualization to a trilingual-bicultural model. The model will then be discussed in terms of theoretical backgrounds, pedagogic implications, and limitations.

2 DEAF ILLITERACY

The history of Deaf education in several countries bears witness to the alarming illiteracy situation of deaf children as well as the various obstacles to education that the Deaf community experiences on a daily basis in the French-speaking countries (Gillot, 1998; Dalle, 2003; Niederberger, 2004; Balosetti, 2011; Hamm, 2012; Millet and Estève, 2012), English speaking countries (Traxler, 2000; Wilbur, 2000; Moores, 2001; Knoors and Marschark, 2014) and Arabic speaking countries (Hendriks, 2009; Al-Fityani and Padden, 2010; El Zraigat and Smadi, 2012; Trine, 2013). This deaf illiteracy is described as heterogeneous because it “takes on a variety of forms, ranging from a complete lack of ability to read, to a simple difficulty in grasping the nuances of a literary text” (Balosetti 2011, 47).

2.1 The Global Context

It is difficult to accurately define the number of deaf people in the world. According to the World Health Organization (WHO) there are 466 million people with disabling hearing loss (over 40 dB in the better ear for adults and 30 for children). However, this number does not outline any distinction between born-deaf, pre-lingual deafened, and deaf or hard of hearing in adulthood. Another figure presented by the World Federation of the Deaf (WFD) is around 70 million deaf people worldwide. About 80%



¹The upper case “D” in expressions such as Deaf community and Deaf culture is used to refer to the socio-cultural component of the community. The lower case “d” is used to refer to the audiological aspect of deafness. The upper/lower case “D” in D/deaf education and literacy is used to underscore the cultural as well as the audiological components involved in D/deaf education.

of them, or 56 million, do not receive any education. Even when the lucky ones (20%) have the opportunity to access to schooling, their level of education is low and illiteracy rates are high.

The WHO report (2014, 29) shows that: “The availability of training institutions for teachers of deaf students varies according to the income level of countries. 61.5 and 62.5% of participants among upper middle-income countries and among high-income

countries, respectively, indicated that such facilities were available. These institutions existed in 37% of low-income countries and 45% of lower-middle-income countries that responded” (see **Figure 1**).

Despite the fact that the numbers provided by the WHO report are indicative of the average resources and efforts made by many countries to sustain an education by professionals capable of creating a bilingual school environment as stipulated in The Convention of the United Nations (UN) on the Rights of Persons with Disabilities and Optional Protocol (CRPD) in articles (2, 21.b, 21.e, 23.3, and 24.3b), these numbers (62.5% in the best cases) are based on the results of research in only 60 countries out of 194 WHO member states. This small number (30.92%) is not likely to stand as a representative of the world’s deaf population, the majority of which, does not have access to adequate education.

In Africa, for example, Adepoju (1984) argues that in terms of service for D/deaf education, Nigeria is 200 years behind compared to Europe and the United States. In Morocco, Soudi and Vinopol (2019) state that: “no research has been carried out to validate the pedagogical approaches or strategies, therefore the education [of deaf and hard of hearing children] takes place without investigation, evaluation or thoughtful revision.” In Tunisia, demonstrations by the deaf are increasing since 2011 to claim their right for employment and education. Indeed, the lack of data about the deaf population in the world makes attempts to assess the reality of D/deaf education around the world incomplete and sometimes even misleading.

2.2 Arab Speaking Context

Providing indicative figures for the proportion of the illiterate deaf in the Arab world as well as valid statistics on the education of the deaf in general is difficult given the lack of such extensive studies in the Arab world. However, the few studies on deaf children education in Arab countries are indicative of the general state of education of deaf children in this area.

In fact, the development of SL status differs widely between the Arabic-speaking and western context. This difference has an impact on the valuation of SL as well as its use in the education of deaf children. Even though SL has been recognized as a full-fledged language in the Arabic-speaking context, the extension of its legal recognition, unlike the western context, still has a long way to go (Broughton, 2017).

Broughton (2017) explains that the creation of deaf schools in several Arabic-speaking countries was not the result of an initiative by the Deaf community or of a structured governmental effort to spread SL through its formal structures but was mainly the outcome of Christian organizations’ efforts targeting the education of deaf children in those countries. Such efforts led to the creation of deaf schools in Lebanon: the Lebanese School for the Blind and the Deaf in 1957; in Jordan: Institute of the Holy Land of Jordan for the Deaf in 1964; in the United Arab Emirates: the AI-Amal school for the deaf in 1979; in Egypt: the unit of the deaf in 1982. In the Arab Maghreb countries, the creation of educational establishments for the deaf was initiated by the French protectorate in the case of Algeria at the end of the 18th century (Colonial School of the deaf-mutes of Algeria, in 1887) or a century later by associations under the

supervision of the government in the case of Tunisia (Tunisian Association for the Assistance of the Deaf, 1970) and Morocco (The Moroccan Association of Deaf Children, 1975).

More recently, the symbolic recognition of SL in Arabic-speaking countries did not provide it with the necessary support as a language of instruction in the educational context. On the other hand, the analogy between diglossic situation in the Arab speaking context (MSA/DA) and the existence of several Arabic sign languages raised further questions about the suitability of SL in the school environment. Compared to the western context where SL research has reached its maturation stage enabling the gradual incorporation of SL in the development of deaf teaching approaches and methods, SL research in the Arab speaking context is still at its incubation stage. Up to this stage, there are still no clear formulations as to the role of SL in D/deaf education in the Arabic-speaking context (Khayech, 2011).

Abdel-Fattah (2005) explained that the efforts to document and standardize Arab SL began to bear fruit in some Arab countries such as Jordan, Egypt, Libya, and Middle Eastern countries. However, the idea of creating a Unified Arabic SL (UASL) paralleling the diglossic situation in the majority language highlighted by Ferguson (1959) where a variety (L) would correspond to dialectal Arabic (AD) and national SL, has further impeded the development of SL as a language of instruction.

Several researchers also explained that the imposition of a UASL on Arab communities is counterproductive (Abdel-Fattah, 2005; Al-Fityani and Padden, 2010; Adam, 2015). On the one hand, because deaf Arab communities have difficulties understanding a standardized language that has poor lexical correspondence with the SLs they acquired and are using (Al-Fityani and Padden, 2010). On the other hand, the prescription of uniformity where there are already many naturally formed SLs reveals both a diminutive view of Arabic SLs and a potential threat to their continuity (Adam, 2015).

2.3 Tunisian Context

The scarcity of data on the deaf population in Tunisia makes a global assessment of the D/deaf educational situation, education methods, or the role of SL in such methods, a highly challenging task. Assuming that the official recognition of Tunisian Sign Language (LST) in 2006 endowed it with a certain legitimacy, it did not mitigate the perplexity as to its nature and its potential role in D/deaf education.

One of the very first attempts to define LST came in the form of rhetorical question by Khayech, (2011) explaining that the dearth of descriptive studies or linguistic research on LST as a stable and independent linguistic system with its own standards does not necessarily entail that it is not a fully-fledged language. In fact, most research aiming at the formal description of LST tend to concur on two main characteristics. The first is the authenticity of TSL as a carrier of the Deaf Tunisian cultural heritage “despite numerous borrowings, LST includes “Tunisian” signs on which there is no way to be mistaken as to their origin because they are quite cultural signs referring to the traditions, to the history of Tunisia and the customs of deaf Tunisians.” The second

characteristic is the heavy borrowing from French Sign language (LSF) as well as from other sign languages such as the Italian Sign Language (LIS) and the Arab Unified Sign Language (LSAU) (Khayech, 2011; Mhimdi, 2018) due to the historical and cultural influence of these languages over the Tunisian deaf population.

The last large-scale study including data on deaf people and their schooling in Tunisia was provided by the Tunisian government in 2010 in the form of an initial report on Tunisia's compliance with article 35 of the International Convention on the Rights of Persons with Disabilities (CRDPH).

Article 7 of this compliance report entitled "Children with disabilities" reveals the schooling procedure for deaf children in Tunisia. According to the report, there is only one public establishment intended for the deaf in Tunisia in 2009 which includes 43 deaf children (see **Table 1** below).

TABLE 1 | Distribution of public special education and rehabilitation establishments by type of disability 2009 (Initial report on Tunisia's compliance with article 35 of the International Convention on the Rights of Persons with Disabilities 2010, 34).

Type of handicap	Number of institutions	Number of enrolled
Mental handicap	2	203
Auditory handicap	1	43
Motor handicap	2	119
Visual handicap	6	631
Total	11	996

On the other hand, there are two associations, under the supervision of the Ministry of Social Affairs, which have 51 centers including 2,664 deaf children. This equates to a total of 2,707 deaf children enrolled in 52 specialized centers for the deaf in 2009 (see **Table 2** below).

TABLE 2 | Distribution of special education and rehabilitation associations for the deaf 2009 (Initial report on Tunisia's compliance with article 35 of the International Convention on the Rights of Persons with Disabilities 2010, 35).

Auditory handicap			
Associations	Centers	Sections	Number of students
Association tunisienne d'aide aux sourds (ATAS)	38	37	2 049
Association pour la protection des sourds	13	13	615
Total	51	50	2,664

This report did not provide any information on the type, level of deafness, the criteria or process by which these children are admitted to these centers, the number of deaf children attending mainstream schools, the education methods used in these centers, or the reason why such associations are exclusively responsible for D/deaf education instead of governmental institutions. However, a comprehensive answer to such questions should first begin with a detailed depiction of the D/deaf educational landscape in the Tunisian context.

The education of deaf children in these centers is an exclusively oralist education even though LST has been recognized since 2006. The use of LST in the classroom is minimal or absent and teachers

do not have any training in LST. Gagne and Coppola (2021) report these similar problems with emerging SLs where SL is not institutionalized either because an inferior sociolinguistic status, or simply because a lack of teaching professionals fluent in SL. Such infrastructural problems are still underscored even in countries where SL instruction was institutionalized several decades ago (Dalle, 2003). Gagne and Coppola (2021) explain that in the case of emerging SLs, various environmental factors have a direct impact on the patterns of development. SL sustainment, institutionalization and dissemination are dependent on the size of the deaf population, the availability of SL in school, and the sociopolitical support for the provision of qualified teachers, interpreters, and the necessary resources.

In this sense Kayech (2011:5) explained that although: "The LST has been officially recognized since 2006. (...) the mechanisms for its dissemination and teaching are slow to be defined and put in place by the institutions because of its non-standardization, a *sine qua non* for its institutionalization many questions remain unanswered such as the training of teachers, the training of interpreters, the place of LST in the classroom and in teaching, etc." These same observations were attested 7 years later by Mhimdi (2018) in her investigation of the teaching methods in three education establishments for the deaf children in the capital city of Tunisia.

Although at the surface level this report acknowledges certain efforts and measures taken by the government for the right of Tunisian deaf children to education, a closer investigation may reveal that the D/deaf education situation in the Tunisian context is the least we can say chaotic. The Tunisian education system is not designed to accommodate or take into consideration the special needs of deaf students. In the first 6 years of primary education (6–12 years) deaf children are put into specialized schools before integrating mainstream secondary schools.

Contrarily to what the term "specialized schools" may suggest, there is nothing special about these schools. Deaf children are placed in ordinary classes regardless of their degree of hearing loss and sign language capabilities. They are taught in the oralist tradition with school programs, manuals, and teaching materials used in mainstream schools for hearing students. There is no consideration whatsoever to the needs that deaf children may need in such educational process.

Those special schools are not supervised or funded by the Tunisian ministry of education but by the ministry of social affairs who, in its turn, relegates the duty to the Association Tunisienne d'aide aux Sourds (ATAS) which is a non-

governmental organization funded by the ministry of social affairs. To sum up this seemingly complicated situation, the education of deaf children in Tunisia is simply relegated to a non-governmental association that has no clear strategy or methodology as to the instruction of deaf students.

The implications of this unusual situation are two-fold. First, the government view of deafness is a pathological view. This means that the ministry of education is not qualified to initiate any D/deaf educational endeavor. Secondly, the ministry of education has no obligation whatsoever in the design, supervision, and implementation of the educational programs designed for deaf children. Such situation resulted in not only the recruitment of teachers and education personnel that have no training, experience, nor theoretical backgrounds knowledge to deaf children education, but also the literal adoption of mainstream education programs due to the absence of any D/deaf education professionals able to design and implement such education programs.

The repercussions of this pathological view of deafness are significant at the level of LST recognition and propagation. Deaf children who are taught in the oralist tradition in specialized schools are not allowed to use LST in the classroom. Most teachers in these schools have little to no competence at all in LST. Observations from our preliminary field study of the Tunisian educational context in 2020 show that classroom instruction is implemented in the majority spoken language, although there is still a considerable amount of research and observation as to what spoken variety is used in those classrooms and the use of LST is restricted to informal conversations among deaf students outside the classrooms. Such oralist formal educational environment has not only inhibited and restricted the propagation of LST, but also relegated its use to informal environments where it is considered as a second-class alternative means of communication compared to the majority language.

After 6 years of pseudo specialized primary education, Tunisian deaf students are integrated to mainstream secondary schools after an evaluation made by a committee within the ATAS. However, there is no information pertaining to the criteria of evaluation upon which a deaf student is deemed as fit or unfit to integrate mainstream schools. Parents of deaf students are simply informed that their child is fit or unfit to joint mainstream schools with no further explanations. Given the type of oralist education given to deaf children in the specialized primary school, one can safely assume that the criteria of evaluation are mainly related to the child's proficiency in lip-reading, speech, and literacy in MSA. Competencies in LST are not likely to be part of these evaluations.

Upon integration to mainstream secondary school, deaf students are put in ordinary classrooms. Those classes encompass a vast majority of hearing students and one or two deaf students. Deaf students are not provided with any type of help and/or supervision. Instruction is provided through AMS, ADT² and French. In this

situation, deaf students are not only confronted to the written form of AMS but also to another foreign language in its spoken and written modalities in core subjects such as sciences, math, and technology in an education program exclusively designed for hearing students.

Such a model of secondary school education cannot even be considered as an oralist model since the oralist model assumes, whether implicitly or explicitly, that the subjects of instruction are deaf students, whereas in the Tunisian situation the condition of deafness is utterly ignored and denied. Deaf students are taught by mainstream teachers in mainstream schools with hearing students with little or no effort to accommodate or adapt the educational program. Even if teachers wanted to help deaf minorities in the classroom, neither the classroom conditions nor their training would allow them to do so. Such integration strategies, if the word strategies can apply in such a situation, directly contribute to the deaf illiteracy situation in the Tunisian context.

Although this situation of deaf illiteracy as well as the results of the oralist approach are not statistically documented in Tunisia, several daily articles as well as demonstrations of the deaf in Tunisia testify to the failure of the current deaf schooling system. Indeed, an article published in 2012 by Tunis Afrique Presse (TAP) documents the organization of a workshop entitled "The educational system of the deaf child" by the international research institute in SL (ICHARA)³ at its headquarters in Tunis. The article reports a statement by Mr. Zekri Lotfi, audio-prosthetist and audiologist, on the objective of the workshop which boils down to convincing the supervisory authorities of the need to adapt the education system to consider the specific needs of deaf children and make the necessary educational reforms. He explains that "The generalization of the same educational programs based on an 'oralist' method to all school children without considering their differences and the specific needs of each, would be an erroneous approach." Dr. Zekri Lotfi declares that in 40 years more than 40,000 deaf children have been educated in special schools and that only seven of them have been able to obtain a higher education diploma.

This need for educational reform for the deaf was clearly underlined in a demonstration organized by the deaf Tunisians on October 23, 2017, in front of the municipal theater of Tunis to call for their rights for employment and education. The President of the association "Ibssar" of leisure and culture for the blind, visually impaired and deaf individuals was present at the demonstration in support of the Deaf community's struggle for the application of the law number 2005-83 of August 15, 2005, related to the protection and promotion of disabled people.⁴ He explained to the TAP agency that "The deaf demand the

²AMS Modern Standard Arabic is a high and standardized variety of Arabic existing mainly in its written form and assumes the role of institutional and literacy language in the Tunisian context. ADT Tunisian Dialectal Arabic is a low and non-standardized variety of Arabic existing mainly in its the spoken form and is the vehicle for the Tunisian socio-cultural heritage transmission. More recently, ADT began to emerge and spread in an Arabic script written non-standardized versions.

³The ICHARA Institute was created in 2011 with the aim of undertaking, organizing, and promoting research in sign language in Tunisia for the acquisition of knowledge and the development of communication and education for the deaf.

⁴NGOs in the Tunisian context are liable to include individuals with more than one clear-cut sensory handicap. Correspondingly, associative work and manifestations include more than one NGO. Moreover, NGOs such as ATAS that target deaf members can also have visually impaired members.

application of the laws related to their employment, public transport, and the dissemination of SL (...) as well as the development of an education program adapted to the deaf situation in Tunisia and in accordance with the international conventions and the 48th article of the Tunisian constitution.”

3 APPROACHES TO DEAF LITERACY DEVELOPMENT

The history of schooling and educational policy for deaf children traces nearly one hundred years of dichotomy between supporters of the oralist and the bilingual method. The oralist method proponents prioritized spoken language and speechreading learning for an absolute assimilation of deaf individuals into the majority hearing community insisting that SL does not equip deaf individuals with the necessary cognitive skills that the spoken language bestows. Supporters of the bilingual method, on the other hand, insist on SL learning for an optimized literacy development in the majority language with the conviction that SL provides the necessary cognitive and metacognitive skills that are inaccessible through spoken language (Millet and Estève, 2012). This conflict was further amplified as it started to encompass ideological and religious dimensions (Cantin, 2016) and mutated into one of the central causes of deaf illiteracy in France due to the stigmatization of SL and its users (Grosjean, 2008; Grosjean, 2010; Balosetti, 2011).

3.1 The Oralist Approach

The earliest forms of the oralist approach emerged in Europe in the 17th century under the form of religious preceptorship with l'abbé Jacob Rodrigues Pereire. His goal was to teach nobility deaf children to speak relying on articulation and lip-reading techniques (Bedoin, 2018). Later that century larger scale oralist forms of education for deaf children issued from modest families were founded by d'abbé Deschamps in Orleans and spread throughout Europe. The oralist method reached its peak after the Milan conference 1880 which claimed the oralist method supremacy and banned bilingual education as well as the use of SL in deaf education for more than 100 years.

3.1.1 Theoretical Backgrounds

One key question instigated by Cuxac (1983: 89) in his discussion of ideological conflict between the oralist and the bilingual approaches was: “to what does an educational practice owe its appearance?” In this sense, it is important to note that the prevalence of the oralist approach at the 17th century was not a product of a rigorously designed scientific method, but a by-product of prevailing medical, political, religious, and philosophical ideologies. From a clinical-pathological perspective, deafness was viewed as a handicap that must be cured through various medical procedure and interventions so that deaf individuals become “normal.” This very same pathological view is rooted in the Greek philosophy since 384 B.C where philosophers such as Aristotle claimed that thought is

intrinsically linked to language and therefore it is impossible to reason without the ability to hear.

3.1.2 Limitations of the Oralist Approach

It is difficult to statistically report the results of the oralist approach in the 17th century for there was no statistical studies conducted at that time. However, the testimonies of several deaf students as to the limitations of the method are echoing through deaf literature at that time. Cuxac (1983, 46) reports the testimony of Allibert, a deaf student of Jean Marc Gaspard Itard explaining that after having subjected him to unsuccessful medical treatments for 5 years to restore his hearing, he undertook the task of his education. Alibert explains that despite all Itard's oralist based methods of instruction, he could not grasp the subtle nuances of the French language. As an ultimate solution, Itard sent him every day to M. Ferdinand Berthier to ask him for explanations in sign language.

More recently, research evidence from Gallaudet Research Institute, which has been collecting data on deaf students' academic achievement over last 50 years, indicates that deaf students are in general underachieving. Similar findings are persistent not only over time but also across countries. In their large-scale academic achievement testing of American deaf and hard-of-hearing students, Qi and Mitchell (2012) found that over 30 years, a wide gap still exists between American deaf students and their hearing counterparts. The same results were reported in Spain by Domínguez and Alegría (2009) who examined the level of reading competence in a sample of fourteen adults with a profound prelingual hearing. The results demonstrated that their reading level was comparable to hearing students at the end of primary education. In Kenya, Sambu et al. (2018) reported that the academic performance of learners with hearing impairments in special schools remained below average and that few deaf pupils graduate to high school and within the expected time period.

Based on a general consensus that the reported poor academic achievement performances are not a direct consequence of hearing loss (Marschark, 1993; Moores, 2001; Niederberger and Prinz, 2005; Convertino et al., 2009; Hall, 2015), several scholars centered their endeavor on the potential paths of linguistic and metalinguistic transfer offered by SL as a medium of instruction in deaf classrooms. Several of these studies reported adequate and increased academic performance of deaf students when exposed to SL as a medium of instruction in bilingual educational contexts (Nover et al., 1998; Rudner et al., 2015; Holmer et al., 2016; Hrastinski and Wilbur, 2016; Scott and Hoffmeister, 2017; Sambu et al., 2018; Allen and Morere, 2020; Lillo-Martin and Henner, 2021).

3.2 The Bilingual Instrumental Approach

3.2.1 Theoretical Backgrounds

The second half of the 17th century marked a very important period in terms of the ideological conceptions of speech and its relation to thought (Moody et al., 1998). The certainty which has long been established by philosophers like Aristotle and Plato

begun to be called into question in the 17th century by philosophers and linguists like Antoine Arnauld, Claude Lancelot and Pierre Nicole who gave birth to new linguistic theories such as the General and Rationalized Grammar also known as “universal grammar” (Cuxac, 1983).

The first bilingual approach to D/deaf education saw the light in the 1760s with l'abbé de l'Épée who, through his exposure to SL, began to discover its complexity as well as its communicative effectiveness. He then understood that the linguistic and communicative bases offered by SL are not inferior to those provided by the spoken one and can be used for learning written French language (Cuxac, 1983; Moody et al., 1998).

More recently, research development in Second Language Acquisition (SLA) theories provided a scientific framework though which a functional form of deaf bilingualism could operate. This view of literacy language and L2 allowed the exploitation of SLA research and theories as pertinent theoretical framework under which the task of deaf literacy development can be approached scientifically. Cummins (2006) states that during language learning, a child acquires a set of implicit metalinguistic skills and knowledge that can be used to learn another language of the same modality. This Common Underlying Competence (CUP) provides the basis for the development of both the first language (L1) and the second language (L2). According to Cummins, the mastery of L1 can only support L2 learning if adequate exposure to L2 exists as well as the motivation to learn. Conceptual and cognitive knowledge acquired in L1 can then be used to facilitate the acquisition of proficiency in L2 (Nover et al., 1998; Hrastinski and Wilbur, 2016; Allen and Morere, 2020; Lillo-Martin and Henner, 2021).

3.2.2 Pedagogic Implications

The idea of language learning stratification (SL/written language/spoken language), in which SL plays both a role of L1 and a metalinguistic mediator, has contributed to the rise of SL in the D/deaf educational sphere.

More recently, the transposition of L2 learning theories to the D/deaf educational context has reinforced this functional role of SL. The application of Cummins' Common Underlying Proficiency model (1981, 2006) in a bilingual educational model for deaf children implied that the development of language skills in SL must imperatively precede the development of skills in literacy skills. SL is, therefore, seen as an instrument for developing literacy skills as well as a point of reference for explaining and comparing the way meanings are expressed in writing (Padden and Ramsey, 2000; Niederberger, 2004). Along the same lines, Swanwick (2016), Henner et al. (2016) and Allen and Morere (2020) argue that the development of SL skills should be recognized as an anchor for literacy skills development. Allen and Morere (2020) explain that the Possession of strong ASL skills contribute significantly to future academic success. Other researchers such as Holmer et al. (2016), Bogliotti et al. (2020) and Lillo-Martin and Henner (2021) explain that earlier access and exposure to SL input results in better language and academic outcomes. Conversely, delay in

access and exposure to SL may result in cognitive delays and limited health literacy (Hall, 2015).

3.2.3 Limitations of the Bilingual Functional Approach

Although the bilingual functional model aims at optimizing deaf literacy development, it does not seem to foster a balanced bilingualism where learning both languages is of equal importance (Grosjean, 2010). SL learning in this context is restricted to an instrumental role serving as a linguistic platform through which the primary objective, literacy in the majority language, can be achieved. Literacy development is the only scale upon which the success of this form of deaf bilingualism is attested. In fact, such functional bilingual model raises several questions as to the nature of bilingualism it proposes. How can we restrict the assessment of bilingualism to the assessment of only one language? Can we qualify this type of pedagogic models as a bilingual model? Doesn't this model rather suggest a subtractive model of bilingualism (Dalle, 2003; Perini, 2007; Perini and Leroy, 2008; Garcia and Perini, 2010; Grosjean, 2010; Perini 2013)? Can we confine SL to such an instrumental function?

Numerous researchers transcended the linguistic aspects to explain that deaf bilingualism is not limited to the linguistic and metalinguistic aspects of language learning (Dalle, 2003; Ohna, 2004; Leigh, 2009; Maxwell-McCaw and Zea, 2011; Grosjean, 2010; Bedoin, 2018). Several socio-cultural and ethnolinguistic factors intervene in the learning dynamics of SL as well as the majority spoken language. The neglect of such factors can result in difficulty or even refusal to learn SL or the majority language.

3.3 Bicultural Bilingualism

3.3.1 Theoretical Backgrounds

Bicultural bilingualism is viewed as a multifaceted process that cannot be confined to its linguistic components. Grosjean (2010) and Leigh (2009) explain that the definition of bilingualism transcends the linguistic components to include the sociocultural and ethnolinguistic dimensions of language learning. As a definition of a bilingual-bicultural person, Grosjean (2010:137) outlines three distinctive features:

- s/he participates, at least in part, in the life of two cultures (two worlds, two major cultural networks, two cultural environments) and this on a regular basis.
- s/he knows how to adapt, partially or more extensively his/her behavior, attitudes, and language to a given cultural environment.
- s/he combines and synthesizes traits from each of the two cultures.

In the same vein, the education of the deaf in the North American context has followed the same development path as in the French context. Drasgow (1993) explains that the purely scientific approach to D/deaf education has unrealistically broken the link between language and the culture it represents. A realistic approach to D/deaf education would therefore include the cultural component. Researchers such as Barnum (1984), McIlroy and Storbeck (2011), and Ritzmann and Gore (2019)

explain that exposure to Deaf culture is of utmost importance for deaf children in the educational context. Such exposure would promote self-acceptance and high self-esteem and promote the perception of deafness as a difference rather than a handicap. In fact, the cultural component is an indispensable element for a successful model of education where deaf students will perceive themselves as different but fully capable learners.

Garcia and Perini (2010) transcend the classic definition of bicultural bilingualism to suggest that deaf bilingualism is of a diglossic nature. In this model, the nature of the relationship between SL and literacy language is complementary and osmotic. The authors (2010, 75) explain that this type of diglossic bilingualism makes “two languages of a different modality and typologically very distant coexist in a very constrained and very specific way.” These two languages “are functionally and almost exclusively distributed. The spoken form is the SL and written form is the written French.” This definition of the complementary and integrative nature deaf bilingualism does not only account for the functional distribution of the two languages but also accounts for the potential influence that both languages may exert on each other due to their permanent contact.

This same diglossic conceptualization of deaf bilingualism, at least at the linguistic level, is also highlighted in the North American context by Connor and Greenberg (2021) in their adoption of the lattice literacy model for deaf and hard of hearing (DHH) children literacy development. In fact, Connor and Greenberg (2021) draw an analogy between the literacy learning situation in the Arab world where children with typical hearing are confronted to a literacy language that is phonologically, syntactically, and semantically different from the majority spoken language, with the situation of DHH American children whose spoken language (ASL) is different from the literacy language (written English). Connor and Greenberg (2021) explain that even children who are fluent in ASL are confronted with the barrier of not knowing written English phonology, grammar, and vocabulary. However, unlike Garcia and Perini (2010) this diglossic conceptualization is of a purely linguistic nature.

To overcome the linguistic and modal disparities between ASL and written English that constitute major barriers to deaf literacy development, Connor and Greenberg (2021) put forward the lattice model for reading and literacy development. This model was initially developed for typically hearing children (Connor, 2016) and later adapted to reading development of DHH children. Based on evidence from previous research on reading for DHH as well as typically hearing children, this tripartite model attempts to explain how DHH children learn to read, identifies the potential restraints to proficient reading, and the instructional implications to overcome those restraints.

However, some theoretical underpinnings of the lattice must be approached cautiously. First, the linguistic and modal disparities outlined by Mayer and Wells (1996) between ASL and English making Connor and Greenberg (2021) assume that DHH signers have “to learn to translate ASL vocabulary and grammar to English vocabulary and grammar to be able to read written English” is a forcingly restrictive view SL, bilingualism, and the linguistic, cognitive, metacognitive, and sociocultural

processes underlying SLA. Cummins (2006) asserts that cognitive and conceptual knowledge is as relevant to the development of literacy as the linguistic knowledge. He explains that the deaf child, like any other child, relies on his prior knowledge in the interpretation or production of written words. Cummins (2006) explains that L2 learning is not limited to the level of linguistic transfer as perceived by Mayer and Wells (1996), but it extends conceptually and cognitively. Indeed, a deaf child whose conceptual knowledge in SL as L1 is well developed has more cognitive abilities to bring to reading or writing in L2. Accordingly, DHH children do not simply proceed to a mere translation of ASL to English vocabulary and grammar (Nover et al., 1998; Hrastinski and Wilbur, 2016; Allen and Morere, 2020; Lillo-Martin and Henner, 2021).

Additionally, the psycho-social treatment of deafness in Connor and Greenberg’s model seems to be primarily rooted in audiological deficiency premises rather than Deaf cultural premises. In fact, the social skills as well as social development of deaf children within a majority hearing community do not conform with patterns of typically hearing children (Glickman, 1993, Glickman, 1996), moreover, the social development and identity patterns may differ from a DHH child to another. Pathological descriptions of social distancing from hearing peers described as a hallmark of spoken language deficiency by Connor and Greenberg (2021:58) may translate into one of several Deaf social identification stages (Glickman, 1993; Ladd 2003; Leigh 2009).

Finally, one particularly relevant characteristic underlined by Connor and Greenberg (2021) is that they draw an analogy between the literacy learning situation in the Arab world where children with typical hearing sensitivity are confronted to a literacy language that is phonologically, syntactically, and semantically different from the spoken language. In fact, this diglossic situation has, indeed, resulted in low literacy rates all over the Arabic world including the Tunisian context. However, these low literacy rates are not only the product of purely linguistic differences but also the product of the social and cultural “alienation” that Modern Standard Arabic (MSA) learning imposes on children in the Arab educational contexts (Haeri, 2009). Haeri (2009), Myhill (2014) and Saiegh-Haddad and Joshi (2014) suggest that education in Dialectal Arabic in the first few years of schooling is the most effective way to teach literacy in MSA and avoid students’ sociolinguistic alienation.

Now if we are to apply to the Tunisian deaf context the diglossic analogy used by Garcia and Perini (2010) in the French deaf context and by Connor and Greenberg (2021) in the north American deaf context, then Tunisian DHH children are faced with what we might describe as a double diglossia. Tunisian deaf children are confronted to a literacy language that is phonologically, syntactically, semantically, and socioculturally different from the majority spoken language which, in its turn, is different from TSL.

Another particularly relevant model for deaf literacy, more particularly writing, within the sillage of the bilingual approach is the Strategic and Interactive Writing Instruction model (SIWI) put forward by Dostal et al. (2015). Unlike Connor and Greenberg (2021), Dostal et al. (2015) model’s starting point is

Deaf culture. The SIWI model views and places deaf learners in their sociocultural and sociolinguistic context for a tailored and culturally sensitive classroom instruction.

Within the SIWI model framework, deaf students are not constantly compared and evaluated according to the hearing majority standards but are viewed as a population with linguistic developmental patterns that are distinct from the majority hearing population. Those different developmental linguistic patterns inherently imply the provision of instructional and evaluation methods different from the majority hearing standards.

From a methodology point of view, Dostal et al. (2015) explain that the written tasks are initially performed in SL before proceeding to a linguistic and metalinguistic comparison to the written form of the majority language. From this perspective, deaf students do not only engage their SL competencies but also their sociolinguistic and Deaf cultural backgrounds and visions. The ideas and visions initially formulated in SL are then compared to the cultural and writing standards of the majority language. One major advantage of the SIWI model is that not only it allows in concrete terms for the linguistic and metalinguistic comparison between SL and the written form of the majority language, but also for an implicit/explicit comparison between Deaf and hearing cultural values and standards. Bilingualism in this model is not restricted to the formal teaching of linguistic aspects of SL and writing but it is further extended to encompass the Deaf and hearing cultural components to language learning.

This steady progression from SL and Deaf cultural anchors to the written form of the majority hearing culture may also reduce alienation effects that deaf students may encounter when confronted to an already cognitively demanding writing task. This view of classroom instruction in the mother tongue is analogous to Haeri (2009), Myhill (2014), Saiegh-Haddad and Joshi (2014) and Hall (2015). However, it is worth mentioning that although Dostal et al. (2015) SIWI model acknowledges the differences in SL proficiency among deaf children, it does suggest any preliminary SL teaching for deaf children with limited SL proficiency due to language deprivation. Thus, the initial production SL writing versions is likely to be challenging for those students. In fact, preliminary SL classes would constitute a guarantee for success of model.

3.3.2 Limitations

This bilingual-bicultural model was designed and implemented in western predominantly monolingual or multilingual contexts with a dominant majority language. Its objective of providing deaf learners with a simultaneous and dual access to deaf and hearing cultures entails that each culture is represented by one language and each language represents one culture. In the Western context, the relative similarity of the written and spoken forms of the majority language allows the written form to function as a portal of access to the socio-cultural heritage of the majority hearing community. However, this might not be the case in the Arab speaking context where the “one language one culture” model does not apply. The diglossic situation characterizing Arab

speaking countries thereby makes the adoption of the bilingual-bicultural model inadequate.

Although this model provides sound theoretical frameworks at the linguistic and sociolinguistic levels, as well as empirical evidence of its efficiency in deaf students’ literacy skills development, its generalization and application without adaptation to the trilingual Arabic speaking contexts might not produce the expected effects.

4 APPLICABILITY OF THE BILINGUAL BICULTURAL APPROACH TO THE TUNISIAN CONTEXT

4.1 The Tunisian Sociolinguistic Context

Tunisia is situated in the Western region of North Africa also called the Arab Maghreb region. It is bordered by Algeria to the West and Southwest, Libya to the Southeast, and the Mediterranean Sea to the North and East.

The Tunisian cultural and linguistic heritage are the product of the succession, intersection, and rivalry amidst an array of different cultures and languages. From the Phoenician settlement and the establishment of Carthage (12th to seventh century BC), the roman empire occupation for more than 800 years (146 BC-697), the Muslim conquest (697-1574), the Ottoman occupation for over 300 years (1574-1881) and French colonization (1881-1957), a myriad of cultures, religions, and languages rose, flourished, declined.

Today, the least we can say about the Tunisian linguistic landscape is that it is complex and multifaceted. In the following three subsections two of its major characteristics, namely diglossia and multilingualism, will be discussed in terms of linguistic practices, variation, and contact phenomena as well as in terms of the status relegated to each language and/or variety in Tunisian education, in general, and D/deaf education, in particular. The final subsection will outline the potential incompatibilities with the bilingual bicultural approach in the light of the linguistic particularities outlined in the earlier sections.

4.1.1 A Diglossic Landscape

Tunisia is a diglossic country where there are not only two varieties H(igh) and L(ow) of the Arabic language as defined by Ferguson (1959: 336), but several distinct varieties of Arabic:

- 1) Classical Arabic (CA): variety used in its spoken and written form exclusively in religious contexts.
- 2) Modern Standard Arabic (MSA) used in institutional, media, administrative and political contexts in its spoken and written forms and is often indicative of high educational status.
- 3) Tunisian Dialectal Arabic (ADT) used in its spoken form in informal contexts and often representative of lower social and educational status. Unlike CA and AMS, ADT is not standardized and exists predominantly in the audio-vocal modality. (Abdel-Fattah, 2005; Hendriks, 2009). More recently, ADT started to gain more significance and its usage in a written form based on the Arabic script began

to acquire acceptance in a “post-diglossic” Tunisian community (Walters, 2003).

In a more detailed description of the Arabic varieties existing in the Tunisian context, Daoud (2011) enumerates two supplementary varieties of Arabic existing in the Tunisian context which are: Literary Arabic (LA) and Educated Arabic (EA). Such classification is beyond the scope of the current article but is used as an example to highlight the multiple versions and nuances of Arabic existing in the Tunisian context compared to the Fergusonian binary model of diglossia.

4.1.2 A Multilingual Landscape

Along with the pervasive diglossic situation, the Tunisian linguistic context is also a multilingual linguistic environment where at least three languages come into contact. French was introduced to the Tunisian context during the French colonization (by the end of the 19th century). It was not only established as the institutional language and its dissemination was reinforced and sustained through an education system that heavily relied on the French language as a medium of instruction. This resulted in 63,6% of the Tunisian population being bilingual in Tunisian Arabic and French (Valantin and Gonthier, 2007).

Daoud (2011) superimposes a situation of diglossia in the French language including two varieties of French on the already existing Arabic diglossic situation in Tunisia. The first variety is the Metropolitan French variety, considered as the high form, used by a particular community of Tunisians both inside and outside the family context. According to Daoud (2011) this variety exists mainly within families who include an expatriate or a native French speaking parent or parents who were educated in the French school system tradition and opted for a French school education for their children. It is therefore representative of a high socio-educational status. The second variety of French is labelled by Daoud (2011) as the North African French variety. This variety does not constitute a fully-fledged register, but different levels of usage for different communicative purposes. Daoud (2011:14) explains that these two varieties of French display “a diglossic range of use that somewhat parallels that of Arabic.” However, this analogy might seem confusing given that the use of the two mentioned varieties does not comply to the classic diglossic rules of usage, neither do they allow for the rule of mutual exclusivity that is a main characteristic trait of classic diglossia (see Figure 2 below).

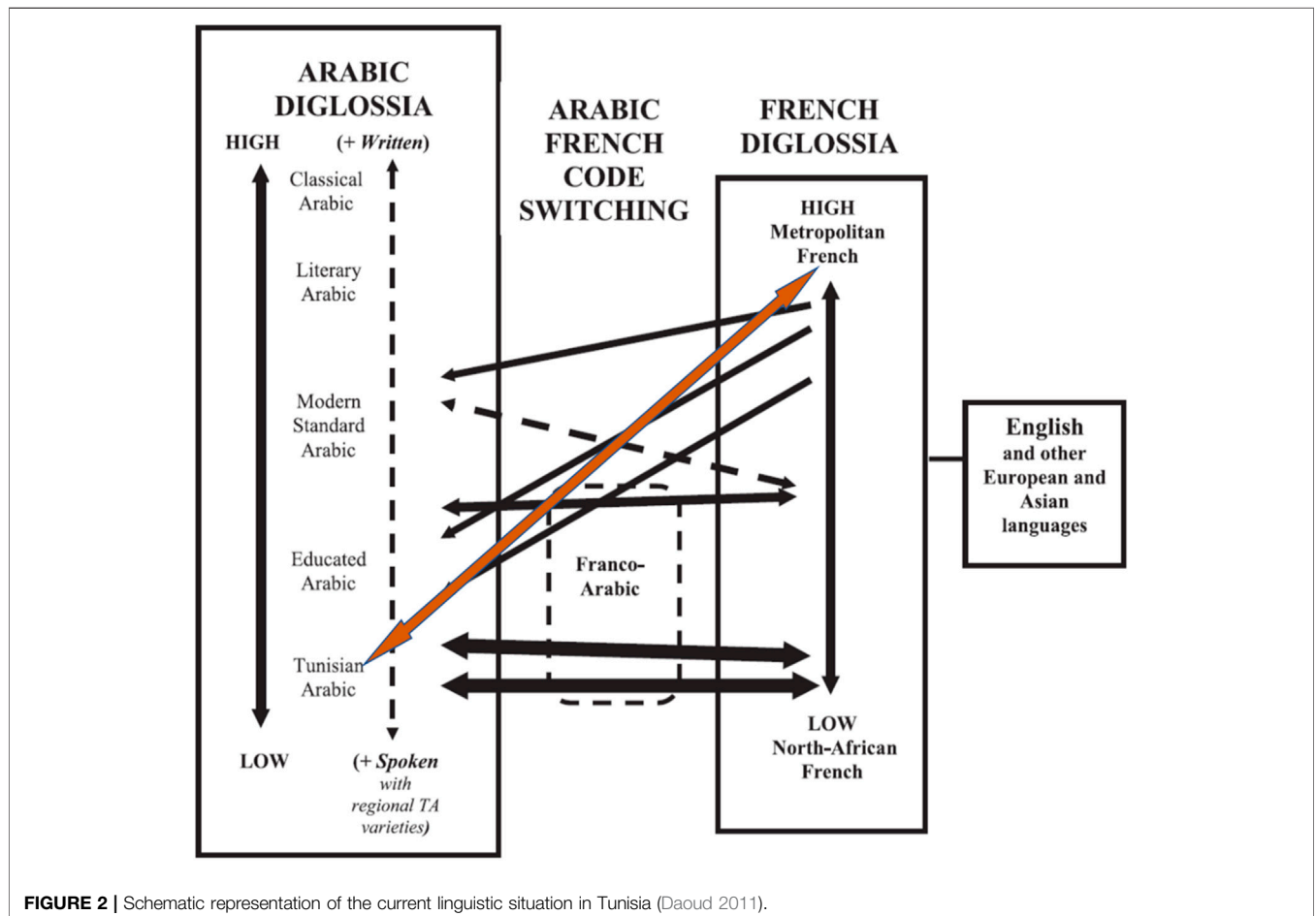


FIGURE 2 | Schematic representation of the current linguistic situation in Tunisia (Daoud 2011).

The existence of these two languages (Arabic and French) with their different varieties is accompanied with a heavy proportion of code-switching and code-mixing that extends beyond informal contexts to the educational and academic contexts where education in secondary school and university levels is oscillating between French and Arabic as media of instruction. Such interaction between the different varieties is displayed through Daoud's schematic representation of the current language situation in Tunisia. The representation seems to account only for instances of code switching and mixing between Tunisian Arabic and low North African French whereas code switching, and mixing seems to occur between higher varieties of Arabic and high metropolitan French.

Such schematization doesn't account for the situation where code switching and/or mixing occurs between Tunisian Arabic and high metropolitan French. Nevertheless, this is the situation of second and third generations of Tunisian immigrants to France who are only proficient in Tunisian Arabic and high metropolitan French, as they received an exclusively French education. This type of code switching, and mixing was added to Daoud (2011) model in a different color.

This linguistic landscape characterized by a high frequency of code switching and mixing is not restricted to the hearing community in the audio vocal modality, but it also extends to the Deaf community. In fact, the French colonization did not only result in a bilingual hearing community, but also in a bilingual Deaf community through the infusion of LSF in the Tunisian deaf context (Khayech, 2011). Mhimdi (2018) explains that the linguistic repercussion of the French colonization, namely bilingualism, was not restricted to the spoken language but also extended to sign language. She suggests an analogy between the status of the French language in the Tunisian hearing community and LSF in the Tunisian Deaf community explaining that code switching between LST and LSF is as frequent as that between ADT and French in the spoken modality.

In her study of code switching between LST and LSF, Khayech (2011) explains that LST displays a considerably high frequency of borrowings from LSF that it is in some instances virtually impossible to discern whether signs are in LSF or LST "The problem that arises in this type of contact is that the signs become ambiguous as to their origins and we find ourselves unable to judge whether it is really a sign of LST or rather of a sign borrowed from LSF." In the same sense, Mhimdi (2020) tried to establish a connection between LST and LSF through her observations of narrative skills of Tunisian deaf informants explaining that. "According to the gestural production of the Tunisian narrative discourse, we can see that the deaf Tunisians have narrative skills similar to the French deaf. This shows the existence of a strong similarity at the level of gestural creation, based on a common process: the process of iconicization (Cuxac, 1983).

4.1.3 Status of LST, ADT, and AMS and Their Role in the Educational Sphere

The linguistic situation in the Tunisian context is complex, each language or linguistic variety plays a specific and exclusive sociolinguistic role to fulfill a distinctive function. This linguistic situation makes the linguistic development path of the deaf Tunisian child different and even more challenging than that of his western counterparts. Whereas in the western context the spoken and the written form of the majority language are sociolinguistically interchangeable, ADT and AMS are not.

ADT is situated at the lowest end of the Tunisian diglossic continuum and is the least prestigious variety of Arabic (Jabeur, 1999; Daoud, 2011; Khayech, 2011). This variety is not codified and exists predominantly in the audio-vocal modality. Although such definition by Tunisian linguistics suggests a low socio-cultural status of ADT, its sociolinguistic function is nonetheless of paramount importance. ADT is the sole linguistic vehicle of the Tunisian sociocultural heritage and identity. The first language that Tunisian hearing children and most deaf children come into contact with is the ADT⁵. It is through ADT that the hearing Tunisian culture and identity are built, sustained, and transmitted. Regardless of the socioeconomic or educational level, ADT usage encompasses the entire hearing Tunisian population.

However, this variety was excluded from the Tunisian educational sphere due to two main reasons. The first is of a socio-linguistic nature and is related to the low socioeconomic status that this variety is correlated with. The second reason is of a linguistic nature and is mainly related to the absence of codification and standardization. This absence of codification and standardization made ADT the least favorable candidate as a language of literacy compared to French and AMS.

Walters (2003) reports some wind of change as to the status of ADT explaining that there is an emerging new variety of ADT which is no longer stigmatized, and its written form is increasingly present in Tunisia. The manifestation of ADT writing begins to mark its presence in various contexts and for different purposes. Walters (2003) gives relevant examples of famous plays written in ADT using the Arabic script such as the play *Famiilya* (Al-Ja'aaiibii, 1997) and *Klaam Al-liil* (Al-Jabaalii, 1997), or the translation in ADT of the *Petit prince* from Saint-Exupery through which Balegh (1997) demonstrated that ADT could be used for literary purposes.

The recent changes at the educational and socio-cultural levels in the Tunisian context clearly demonstrate that Ferguson's classic definition of diglossia is no longer applicable to the Tunisian context which can be described as post-diglossic (Walters, 2003). The generalization of education as well as the inevitable contact between AMS and ADT led to the emergence of a new variety of ADT that not only exhibits an explicit convergence with AMS but which is also strong enough to project itself into the literary sphere.

⁵Ninety percentage of deaf children are born to hearing parents (Dubuisson and Grimard, 2006).

The AMS however, enjoys a high socio linguistic status as the language of literacy, education, and administration. As a highly codified and standardized variety, it represented the best candidate when decisions to assert the Arab Islamic identity were being formed in the Magrebin context. Such nationalist decisions of Arabizing education came as a means of distinguishing the Tunisian Arab culture that was being increasingly intertwined with the colonialist culture (Daoud, 2011). These hasty nationalist decisions (Daoud, 2011) had a deep negative impact in most Magrebin countries at least at the educational level due to a complete absence of a comprehensive language planning policy (Walters, 2003; Daoud, 2011). The primary goal of such decisions was of a glottopolitical nature rather than of a well-established language policy. Such policy was unable to dethrone French as a language of instruction at the university level as it remained the language of instruction for most of the scientific subjects. To sum up, although the AMS enjoys a high sociolinguistic status related mainly to political and nationalist endeavors, it is a language of literacy, administration, and political endeavors rather than a means of cultural transmission and dissemination.

The status of LST in the Tunisian context is at least complicated. At the surface level, LST seems to a well-established minority language. The Tunisian government recognized LST as a fully-fledged language in 2006, Tunisian news reports are translated in LST for deaf Tunisians, and the Tunisian initial report of compliance to the article 35 of the International Convention on the Rights of Persons with Disabilities (CRPD) highlights the efforts deployed by the Tunisian government to provide adequate education for deaf children.

Such initial inspection of the Tunisian context might put Tunisia as one of the most sensitive countries to deafness. However, except for news flashes translation, LST is completely excluded from the educational sphere. Its use is not allowed in formal educational contexts and its propagation seems to be inhibited by a hostile educational context.

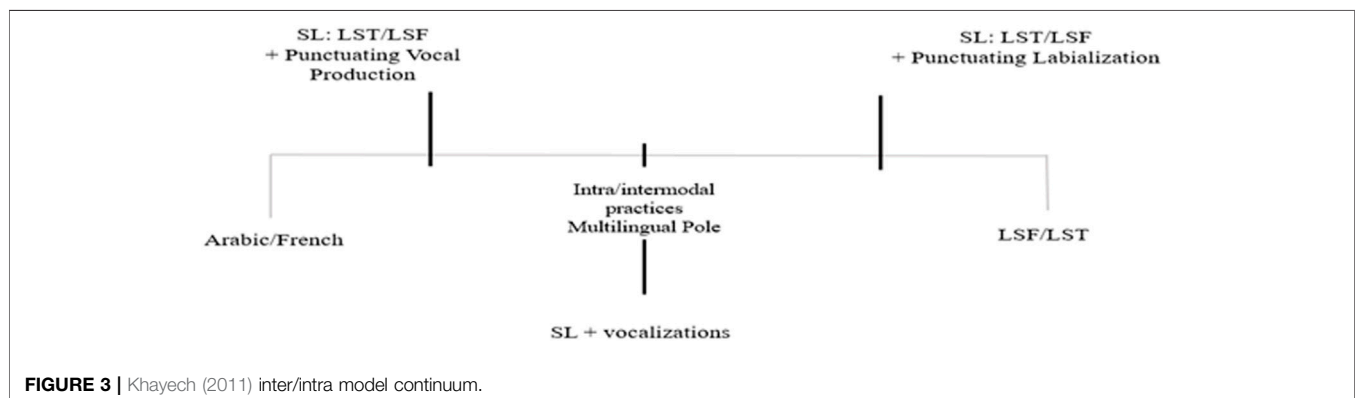
The only contexts where LST seems to enjoy recognition and valorization is within Tunisian non-governmental organizations such as the Académie Sportive et Educative

des Sourds de Tunis (ASEST). Such organizations not only promote LST usage within the Deaf community, but also within members of the hearing community who are in contact with deaf individuals. Hearing parents are offered LST courses to help them bridge and extend communication channels with their deaf children. The valorization of LST is part of a global valorization process encompassing the entire Deaf community's culture in the Tunisian context. The use of LST in such ONG's is not restricted to the communication process but it is extended as a medium of instruction in support study groups. Students who are encountering academic difficulties within the ATAS's specialized schools and secondary school's integration classes are taught different core subjects in LST.

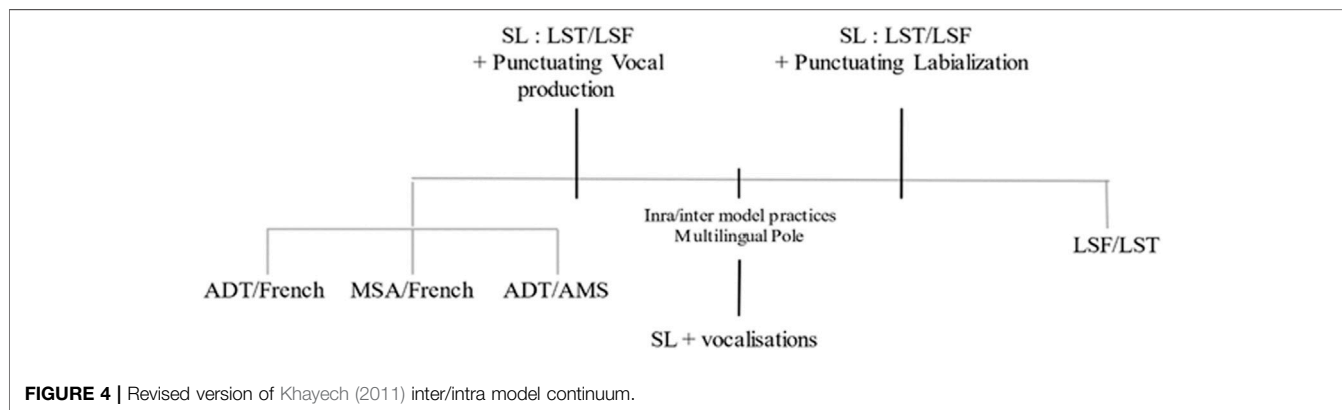
It is important to note that communication in such classes is subjected to a wide range of linguistic variations due to the incorporation of LST. Students do not only display instances of unimodal and bimodal code switching but also instances of code blending (Khayech, 2011). As explained in Section 4.1, the Tunisian linguistic landscape is not only diglossic but also multilingual. This linguistic plurality created a profusion of linguistic contact phenomena in Tunisian deaf classrooms. Khayech (2011) delves into the characteristics of linguistic contact phenomena particular to the deaf Tunisian community in an endeavor to delineate the different instances of code switching and blending occurring among Tunisian deaf signers.

Khayech (2011) did not only identify instances of code switching from LST to LSF but also instances of intermodal code blending LST/Spoken Arabic and LST/Spoken French. She also stresses on the fact that these two linguistic practices are not mutually exclusive but can take place simultaneously. For instance, a deaf signer can display instances of code switching from LST to LSF and at the same time produce vocalized or labialized Arabic or French words. Such instances are outlined in her revised inter/intramodal continuum adapted from Estève (2006) (see **Figure 3** below).

Khayech (2011) model stands as a valuable attempt to the describe and categorize the various linguistic contact phenomena taking place in the Tunisian deaf context. Although the focal point of her study was to highlight the Tunisian multilingual deaf environment, one major component of this linguistic continuum



was not described thoroughly. This component is referred to as Arabic in the first end of her adapted continuum. In fact, variation at the first end of the continuum can be further extended to include AMS and ADT and the potential code switching that is likely to occur between French, ADT, and AMS. The figure below represents our proposition to extend Khayech (2011) inter/intra model continuum (see Figure 4 below).



Although the Tunisian educational system does not seem to acknowledge or to consider this plethora of linguistic variation in the deaf context, there seems to be the seeds of a bilingual-bicultural educational approach within non-governmental deaf organizations such as the ASEST. On the other hand, the absence of any D/deaf education professionals in those organizations makes the establishment of any scientifically based teaching method as well as the design of teaching/learning materials nearly impossible. In fact, the use of LST as a medium of instruction in deaf non-governmental organizations is not the product of scientifically based research but rather it is rather emerging from the conviction that LST is the natural language of deaf Tunisians and that the learning process is far easier with LST as a medium of instruction compared to the oralist approach that Tunisian deaf students are enduring rather than appreciating.

This situation of deaf learners in Tunisia is a reminder of what Allibert, the deaf student of Jean Marc Gaspard Itard, was experiencing in the French context in the 17th century at a national level. Our aim is not to depict a gloomy picture of the current Tunisian situation or situate the actual Tunisian deaf movement in the 17th century compared to its French counterpart, but it is to underline the urgent need for scientifically based educational interventions. Such interventions should be designed by D/deaf education professionals to support and orient such bilingual-bicultural emerging movements towards a culturally sensitive and efficient educational approach rather than proposing a mere reiteration of the western bilingual model that would potentially prove its inadequacy to the Tunisian deaf context.

4.2 Limitations of the Bilingual-Bicultural Approach in the Tunisian Context

The western bilingual-bicultural model is based on a relatively simple and stable monolingual linguistic situation (Harguindeguy and Cole, 2009) or a multilingual situation with one dominant official language. The conceptualization of this model implies the existence of three basic factors: 1) the existence of a hearing

majority community using one dominant language, 2) the spoken form of the majority language community corresponds to the written form, and 3) the majority language in its oral and written form is a carrier of culture and, consequently, the two forms (spoken and written) constitute a gateway to the majority hearing culture. In this case, the spoken and written forms are interchangeable when it comes to providing direct access to the hearing majority culture.

The bicultural bilingual model represents a comprehensive and relevant theoretical basis for an educational approach that deals not only with the linguistic aspect of literacy development, but also the socio and psycholinguistic aspects. Nonetheless, its application, in its current form, to the Tunisian sociolinguistic context may prove unproductive due to linguistic, sociolinguistic, and psycholinguistic limitations.

4.2.1 Linguistic Disparities Between the Western and the Tunisian Context

For the majority deaf children born from hearing parents, the ADT is only partially accessible⁶ and therefore cannot be considered as a mother tongue (Duhayer, Frumholtz, and Garcia, 2006; Delamotte, 2018). Nonetheless, ADT stands in the immediate environment of the Tunisian deaf child as a representative of the majority hearing culture. Delamotte (2018) explains that deaf literacy development is intrinsically associated to a process of acculturation in the majority hearing culture that the language represents. However, a question can be raised: what if this point of convergence between culture and the written form of the majority language ceases to exist? If the most obvious element, that is, the correspondence between culture and the

⁶ADT is visually accessible through lip reading.

written form of the majority language is no longer the operational basis for the bilingual bicultural approach? Is the application of the bilingual bicultural approach still possible in a context where the written form does not necessarily endorse the role of cultural representative?

The Arabic-speaking context in general, and Tunisian in particular, is a context where these questions are particularly relevant. However, before moving further in the discussion, it is necessary to note that the classical nomenclature of the “written” and “spoken” forms of the majority language is not applicable in the Tunisian context. In the western context, the spoken and the written forms correspond to one language. For example, the French language which is the majority language exists into two forms spoken and written. If we want to apply this nomenclature to the Tunisian context, the majority language would correspond to the ADT, the spoken form is the ADT and the written form is the AMS. It is also important to note that (ADT) is not a standardized variety and exists predominantly in the spoken form although more recently Arabic script based varieties of ADT started to gain momentum through media, arts, and literature (Walters, 2003).

The encounter of the deaf Tunisian child with the written form does not happen through ADT, which represents his/her initial linguistic contact with the hearing majority culture, but through AMS, a language different from ADT (Daoud, 2011). This linguistic disparity between ADT and AMS burns the bridges through which family and cultural values can be transferred from the spoken to the written form. This cultural transferability stands as an element of crucial importance in the conceptualization of the bicultural bilingual educational approach in the western context. In the Tunisian case, the spoken form is dissociable from the written form and the socio-cultural transfer between both forms marks its absence when Tunisian deaf children engage in a literacy development process.

4.2.2 Sociolinguistic Limitations

Tunisian deaf children initially evolve in a family and a social environment that exclusively uses ADT. Upon entering school, Tunisian deaf and hearing children are confronted to AMS, a language that is unfamiliar to them and that exists mainly in a

written form. The written form in this case is not capable of using the community’s social and cultural values that the spoken form stands for. From the first day of schooling, deaf children are confronted not only to a written form that is already problematic at the linguistic level, but also with literacy in a foreign language with which they have no socio-cultural connections.

The motivation for integrating the majority hearing community which is first built within the hearing family environment, and which increases as the environment of the deaf child expands (Grosjean, 2010; Delamotte, 2018) is only applicable to the spoken form in the Tunisian context. We can go as far as to assert that the written form in the context of deaf and hearing children in Tunisia can only retain an instrumental value. But unlike his hearing counterpart, the Tunisian deaf child still wonders about his deafness, his identity, and his family environment where deafness has already fragilized the primary identification between child and parents (Tardy, 2012).

From this sociolinguistic perspective, learning to write is no longer limited to the difficulties highlighted in the literature on cognitive aspect of language learning and the construction of a bilingual linguistic model through SL and the literacy language. In fact, the spectrum of difficulties is extended to include the weak socio-cultural representation of the literacy language which only increases the refusal of its learning within a conflict of socio-cultural representations.

5 PROPOSED TRILINGUAL-BICULTURAL MODEL

As explained in the previous section a classical bilingual SL/written MSA model in the Arabic-speaking context does not allow the access to the majority hearing culture, which can result in a more difficult and even unattainable literacy development process. The approach that we propose in this article assumes that the inclusion of a written form ADT based on the Arabic script as a language of learning and language to be learned along with LST in deaf Tunisian classes will result in more effective and fluid literacy development process in ADT.

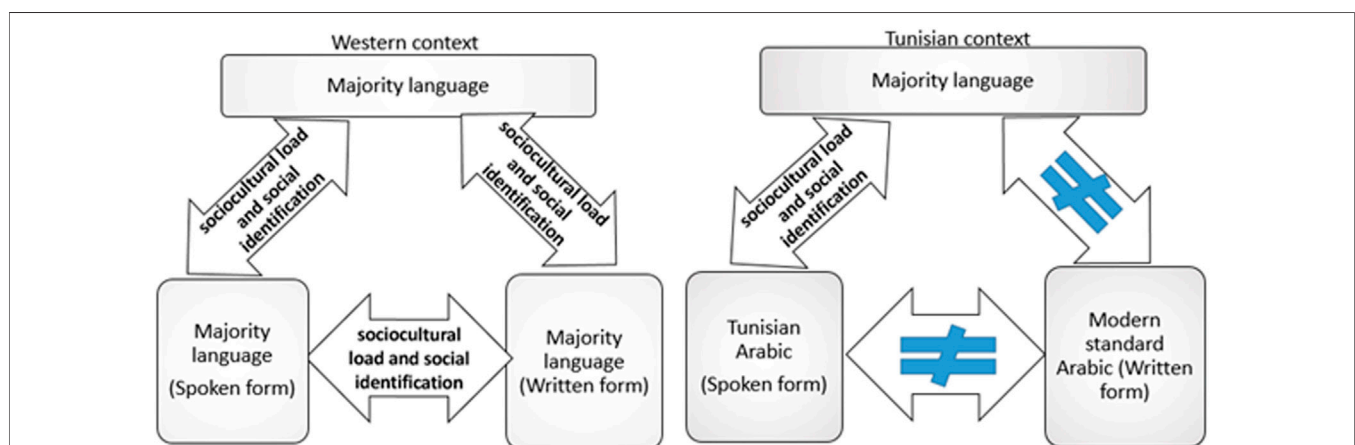


FIGURE 5 | Difference in the socio-cultural and social identification value of literacy language in the Tunisian and the Western context.

5.1 Theoretical Backgrounds

The bilingual-bicultural approach treats the linguistic as well as the socio-cultural aspect of language learning through the incorporation of two languages (SL and the written form of the majority language) on the basis that there is a direct correspondence between the written form of the majority language and the majority culture. This correspondence, which provides the literacy language the necessary socio-cultural load to stand as a representative of the hearing community, does not exist in the Arabic-speaking Tunisian context. As explained in **Section 4.1**, the spoken form exists predominantly in the spoken form and the written form is not representative of the hearing majority sociocultural heritage (see **Figure 5**).

The proposed model constitutes an attempt to bridge the gap between the western and the Arabic-speaking research in the design of a relevant D/deaf educational approach, an approach that takes into consideration the sociocultural components of the deaf and hearing communities to which the deaf child belongs to optimize literacy in a third language (written AMS) in the case of deaf children in the Arabic-speaking context.

5.2 Pedagogic Implications

The sociolinguistic contribution of this model is achieved through the inclusion of two languages, the minority language (LST) and the majority language written (ADT). This model offers the Tunisian deaf child the possibility of building a bicultural identity (Glickman, 1993; Dalle, 2003; Ohna, 2004; Leigh, 2009; Grosjean, 2010; Maxwell-McCaw and Zea, 2011; Dostal et al., 2015; Bedoin, 2018) along with development in a third language representing the literacy language.

In addition to the simultaneous identification, this model will allow a simultaneous exchange not only at the level of the relationship between LST and written ADT, but also at the level of the relationship between written ADT and written AMS as they share the same modality and script. In fact, due to this script similarity we might also expect a more fluid transition from written ADT to written AMS.

On the other hand, the relationship between LST and written ADT in this model remains relationship of a sequential bilingualism. L1 (LST) provides underlying metalinguistic and metacognitive and sociocultural basis (Nover et al., 1998; Niederberger, 2004; Rudner et al., 2015; Holmer et al., 2016; Hrastinski and Wilbur, 2016; Scott and Hoffmeister, 2017; Sambu et al., 2018; Allen and Morere, 2020; Lillo-Martin and Henner, 2021). At a second level, written ADT will play the role of a “linguistic bridge” to literacy development in AMS through a unified modality and script (Arabic script) (Hall, 2015; Belkadi, 2019).

This linguistic bridge method was designed to facilitate literacy development among illiterate women in Morocco in an educational project entitled “Advancing Learning and Employability for a Better Future” (ALEF). In this Moroccan American project, professionals in education and educational policies decided to exploit written dialectal Moroccan Arabic (DMA) and its potential transferability as a gateway for women’s literacy in MSA.

The “bridge” literacy approach represents the first instance in the Arab world where mother tongue is officially approved as a

medium of instruction targeting literacy development in MSA (Hall 2015). Although instruction in Dialectal Arabic was recommended by several scholars (Myhill, 2014; Saiegh-Haddad and Joshi, 2014). Hall (2015) summarizes the method used in exploiting DMA as a bridge to literacy in MSA as learning to identify and represent phonemes in DMA [...] using Standard Arabic orthography before transitioning to MSA grammar and vocabulary. Consequently, instead of using MSA as the exclusive language of instruction, students in Passerelle based literacy programs use their mother tongue as the primary language of communication and instruction in the classroom.

Hall explains that the bridging education method consisted in integrating DMA literacy education into the already existing government program to compensate for the linguistic and psychological gap that learners are facing in learning MSA. During the first phase of instruction “pre-literacy” phase that consists of 60 contact hours of class, adult women were taught how to correspond sounds in DMA to letters in the MSA alphabet. During the “pre-literacy” phase, women are taught a simplified version of the MSA writing system in which only the letters of the MSA alphabet and numbers are introduced. In the pre-literacy phase discussions about social topics are conducted in DMA students express their sociocultural knowledge through their mother tongue to inductively elicit classroom material based on the interests and knowledge and social identification of learners. After the discussions, teachers present the MSA letter to be studied that session and ask students to recall words from the discussion that contain the sound represented by that letter. In the second phase, “literacy phase” of 300 h in which they complete two Standard Arabic primers of the normative government literacy program. One important sociolinguistic property of this approach as (Hall 2015) puts it, is that it breaks the shackles of culturally independent views of literacy and acknowledges both the cultural and linguistic contextuality of literacy development. The use of MSA as a learnt language as well as a primary medium of instruction in the discussion of MSA grammar and phonology allows learners to rely on the metalinguistic and metacognitive knowledge acquired in their mother tongue as an L1, but also.

Hall (2015:64) reports that the 2-year pilot study 2005-2007 to evaluate the design and effectiveness of the Passerelle methodology in four regions of Morocco: Grand Casablanca, Chaouia Ourdigha, Meknès-Tafilalt, and Oriental showed not only better results in literacy development compared to the governmental programs, but also higher rates of enrollment: “During the first pilot year, 1,600 women participated in the study. During the second test year, enrollment increased to a total of 8,240 women. An evaluation of second test year of the Passerelle approach conducted in 2006–2007 showed that adult learners enrolled in Passerelle-based classes had higher retention rates and outperformed students who had been enrolled in the normative government program (Amrani, 2008)”.

At the end of the ALEF Project, the Department for the Fight against Illiteracy (DLCA) of the Ministry of National Education released on May 13, 2008, in Rabat the results of the Passerelle approach literacy. The program concerned 10,000 women in four regions of the Kingdom. The results showed that the program

drop-out rate did not exceed 2%, while it was between 15 and 20%, on a national average in 2006–2007. The women who completed the 60 h of pre-literacy phase acquired a level of literacy similar to that obtained after 100 h of lessons in the regular program. This translates to a considerably higher efficacy rate of 40% compared to mainstreaming programs. Additionally, the attendance rate of students was found to be over 90%, while it was around 70% in conventional courses (Amrani, 2008). In 2007–2008 this bridging method was extended to the level of the Regional Academy of Education and Training of Grand Casablanca where 24,000 women are taking literacy courses based on the bridging approach. And at the end of 2009, the Ministry of education announced the adoption of the pre-literacy phase in its mainstream programs.

In the same vein, the proposed model in this article is not only based on SL's linguistic support for literacy development in AMS, but also proposes the integration on a written form of ADT as a medium of instruction in Tunisian deaf classes. This written version will provide students with the cultural support and identification and will also play the role of a linguistic bridge to literacy *in AMS*. In this scenario, transfer errors from LST to written AMS can potentially be reduced through the mediation of written AD. This dynamic of complementarity where LST and written ADT come together in a single model may have more effective results at the linguistic and metalinguistic level than a binary linguistic approach that is restricted to LST for literacy development in AMS. The model below illustrates the expected dynamic between LST, written ADT and written AMS (see **Figure 6** below).

5.3 Feasibility

The empirical verification of the validity of the proposed model entails a longitudinal comparative study in literacy skills development between two deaf classes taught in the two different

models. Given that the majority of deaf Tunisian school children enter the first year of school with little or no competence in LST, a 2-to-3-year instruction period in LST is necessary for them to build an operational linguistic and metalinguistic basis. After acquiring the necessary linguistic skills in LST students will then be introduced to ADT and MSA in their written forms. Another challenging task in this study will be the design of curricula, teaching materials, and testing instruments in both LST and ADT given the fact that both these languages are neither codified nor standardized. The design of such materials for at least 3 years of instruction will be necessary.

Although the design and implementation of such experiment may seem strenuous and time consuming, the major barrier to the implementation of the trilingual model is not of a scientific or infrastructural nature but it is rather of an attitudinal nature. In fact, the assessment of the empirical validity of a trilingual or even a bilingual model depends on two major factors. The first factor is the acceptance and endorsement of the LST as the language of instruction by the various actors in the education of deaf children as well as the parents of deaf children. The second factor is the existence well trained teachers who are competent in LST and who are willing and capable to create a trilingual school environment for Tunisian deaf children.

The Tunisian sociolinguistic context is not only complex but also loaded with attitudes and assumptions towards ADT and LST. Therefore, the application of any remedial educational approach to deaf literacy development should first begin with a preliminary study of attitudes toward an educational model including two languages that do not possess a written form and did not undergo any formal process of standardization.

Even though the Tunisian context constitutes a favorable ground for D/deaf educational reform, it is essential to explore the applicability of our model not only at the theoretical and

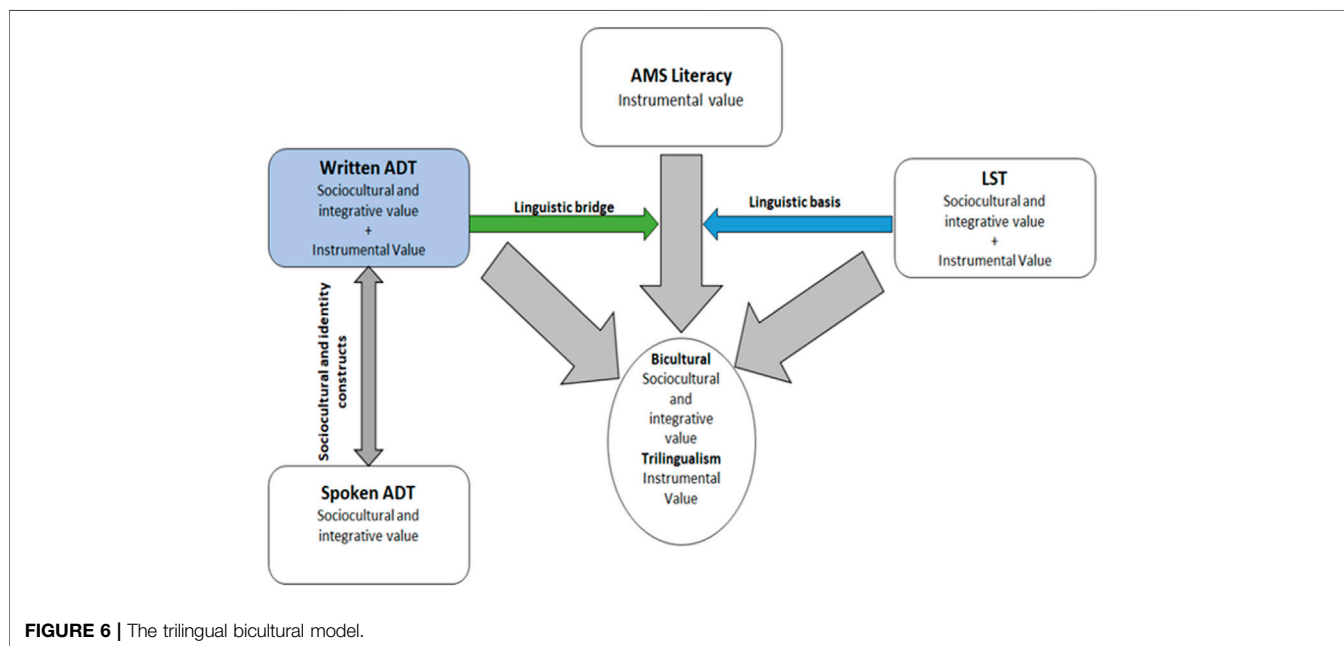


FIGURE 6 | The trilingual bicultural model.

scientific level, but also at the sociolinguistic and glottopolitical level. In fact, D/deaf educational reform in Tunisia must be conducted at two distinct levels. The first is the sociolinguistic level where attitudes of the different stakeholders in D/deaf education must be explored and analyzed extensively (Gardner and Lambert, 1972; Gardner et al., 1977; Gardner, 2000; Gardner and Masgoret, 2003). The second level is the scientific and pedagogic level which would support the creation of a D/deaf educational model adapted to the Tunisian linguistic context with its various linguistic peculiarities. Any reform attempt that fails to consider the sociolinguistic aspect as well as the linguistic ideologies revolving around the D/deaf educational sphere in Tunisia is likely to face partial or total failure.

In this respect, the history of western D/deaf education offers valuable lessons as to the struggle of science against linguistic ideology and glottopolitics. This fight has lasted for several centuries and does not seem to have an end. In this same fight against language ideology, D/deaf educational reform went from a total failure in the Milan conference in 1880 against a fierce monolingual protective language policy that reigned over the European continent, to partial success through the inclusion of the SL as a linguistic bridge in the case of the French context in 2006 under a more lenient language policy. Even under lenient language policies and with the empirical support of a multitude of empirical studies supporting the effectiveness of the bicultural deaf model, its generalization in the French context remains a subject of debate. In this particular case, we can safely assume that it is not the scientific component that stands as a barrier to a D/deaf educational reform in favor of a bicultural bilingual model, but the attitudes of stakeholders in D/deaf education in France. Consequently, the priority in this study is not only to support the theoretical and empirical validity of the proposed model but to examine a component that has not been sufficiently investigated by previous studies and which may constitute a major obstacle to the applicability of a trilingual bicultural model in the Tunisian context.

In fact, despite their scientific value, Western studies have partially succeeded in changing the D/deaf education landscape for the simple reason that D/deaf education and literacy development are not exclusively dependent on the scientific component, but they are also subjected to influence of language ideologies and policies. Such ideologies manifest themselves through the attitudes of the various actors in deaf children education. These attitudes are not only measurable but also scientifically exploitable when it comes to D/deaf education reform.

To conclude, the successful deployment of a trilingual bicultural model is not only dependent on the theoretical or even empirical validity of the model itself, but it is also strongly dependent on the attitude of the different actors in the education of deaf children in the Tunisian context. Correspondingly, any attempt to the application of D/deaf educational models targeting deaf literacy development in the Tunisian context should first

begin with an analysis of the attitudes towards the languages that the model encompasses as well as an analysis of the potential linguistic ideologies governing the diglossic and multilingual Tunisian context.

6 CONCLUSION

Illiteracy seems to be a common denominator when it comes to the description of eastern and western deaf communities. However, this common problem does not always entail common solutions. The current article exposed the magnitude of the common illiteracy problem characterizing both eastern and western deaf communities as well as the different approaches to deaf literacy development in the western context. We showed that research in the western context is in favor of a comprehensive bilingual bicultural approach that enables a simultaneous cultural and linguistic development of the deaf child. We have also explored the limits of the bilingual bicultural approach in terms of its applicability to the Tunisian diglossic multilingual context.

Finally, a trilingual bicultural model based on the theoretical premises of the bilingual bicultural approach but adapted to the Tunisian sociolinguistic context is put forward and discussed in terms of scientific validity as well as in terms of attitudes towards languages and language varieties it encompasses. In fact, the application of such model might be relevant not only to the Tunisian deaf context, but also to other Arab Maghreb countries such as Algeria, Morocco, and Libya where the pervasive diglossic situation seems to be one major shared linguistic characteristic preventing the applicability of a classical bilingual/bicultural D/deaf education. In fact, the potential generalization of the proposed model across Maghreb countries may be appealing given their shared sociolinguistic backgrounds. However, a fully-fledged empirical analysis of language policies and attitudes towards SL, dialectal Arabic, and MSA in each country is of paramount importance to delineate and determine the ways in which such model can be deployed in each country.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding authors.

AUTHOR CONTRIBUTIONS

AN, LB, and NG contributed to conception and design of the study. AN wrote the first draft of the manuscript. LB and NG wrote sections of the manuscript. LB and NG contributed to manuscript revision, read, and approved the submitted version.

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